

# MOTOR AGE

## WASHINGTON in a MOTORING MOOD



WASHINGTON, D. C., March 22—This is a motoring administration, no doubt about it. The president has two cars in his service, the vice-president is a recent convert, the speaker of the house is an enthusiastic motorist, and while some of the senators may show a trace of motorphobia in their talk, it is an assured fact that most of them either own cars or take great delight in riding in them. The toot of the motor car horn is the modernization of the weird, shrill notes with which the mythical character, the pied piper of Hamelin, lured the 130 children of Hamel away from their homes, according to the folk lore of Germany. The music of the horn cannot be resisted and, figuratively speaking, the administration band wagon is the motor car and they're all hurrying to get into it.

### Odd Motor Car Line

As if to emphasize the popularity of the motor car, there has just been put into operation here the oddest motor car line in the country. Indeed, it is more than this. It may be safely claimed for it that it is not only distinctive among all installations of commercial motor cars but is quite the most novel transportation system of any kind in the world. The vehicles that comprise its rolling stock are unique, and finally it has for passengers the most distinguished body of men that regularly ride on any such semi-public conveyances.

This innovation is a motor car line that connects the United States capitol and the

recently completed office building of the United States senate by means of a subway nearly one-third of a mile in length. In this electric-lighted tunnel are in operation electric motor cars of special design, which regularly make the trip from terminal to terminal in 1 minute or less, carrying ten or eleven of the nation's lawmakers or friends of constituents who may have business with them.

At present this most up-to-date of motor car lines is in operation only between the capitol and the senate office building, but it is planned to shortly extend the underground transportation system and have a similar line of cars operating between the halls of congress and the new office building of the United States house of representatives, which is located about as far distant from the capitol as is the senate building, but in the opposite direction. The tunnel by which the house of representatives building is accessible from the capitol is a duplicate of the S-shaped "tube" leading to the senators' working quarters.

### Quick Transportation Demanded

Work began several years ago on the two marble office buildings,—each costing \$3,000,000—for the use of the senators



TUBE THROUGH WHICH THE CONGRESSIONAL MOTOR CAR LINE RUNS

and representatives, respectively. These are the largest office structures in the world, having been made necessary by the limited amount of space in the capitol proper, which limitations taken in conjunction with the constant increase in the number of legislators made it impracticable for more than a fraction of the congressmen to have their private offices in the big white-domed building. Almost from the moment that it was decided to build a huge annex on either side of the capitol there was discussion as to the best means of conveying the law-makers quickly between their office buildings and the capitol. Obviously, an up-to-date system must be devised, for it is frequently necessary for congressmen to make a quick trip in order to vote on a bill upon which a roll-call is demanded, or meet other like urgent contingencies.

#### Tunnel Solves Problem

The first decision reached by Elliott Woods, superintendent of the capitol, was that the various buildings must be connected by tunnel, for in the vicinity of the capitol, as elsewhere, Washington is a city of magnificent distances and Capitol hill is particularly exposed in inclement weather. The tunnel provided, there arose the problem of transportation within the tube. Various solutions were proposed, including moving sidewalks and miniature electric cars operating on a double track system. Finally, however, after full investigation, the officials gave their preference to a line of motor cars, electrically operated. These traverse a concrete roadway, which is of sufficient width for two of the machines to pass at any point in the tunnel. A sidewalk protected by a heavy iron guard rail extends the length of the tunnel, and

pedestrians may get aboard the motor cars at any point in the tunnel, although it is expected that the motor car will not make stops between the terminals except under unusual circumstances.

The electric motor cars, made by the Studebaker company, have been built for a contemplated speed of 12 miles per hour. It has been found that in actual service the average elapsed time for a round trip is 2 minutes. The journey from the capitol to the office building is made in 40 seconds, but nearly twice as much time is consumed in the return trip, owing to the fact that the entire journey is up-grade, and more especially by reason of the circumstances that the cars are in effect, running backward on the return journey. Owing to the limited space at the terminals and a desire to keep these novel shuttle-cars in continuous operation, the

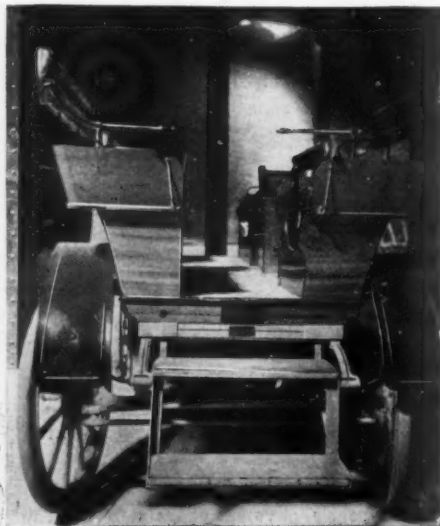
cars are not turned upon completion of each trip. Thanks to the special design of the car with seats along the sides, this mode of operation entails no inconvenience upon the passengers, but when the drive wheels are in front the machine is more difficult to steer and the chauffeur operates at a slower speed which, combined with the slight grade, lengthens the time of the journey to the capitol over that of the trip in the opposite direction.

#### Novel Type of Body

The exigencies above mentioned were in great measure responsible for the design of the new capitol motor cars, which are radically different from anything else ever manufactured. To adopt a homely simile, the new type might be compared with two dog carts placed end to end, linked by a platform on which is the operator's seat, or rather seats, for there have been provided for the chauffeur two individual seats, on opposite sides of the car and facing in opposite directions. When the end of a run is reached the driver changes seats and is thus constantly facing to the front, although the machine is not turned around.

#### Passengers Face Each Other

The seats for the passengers, as above explained, are along the sides, the passengers facing each other. Six passengers can be accommodated in the seats at one end of the car and four passengers in the seats on the opposite end. In rush hours a passenger always can be accommodated in the vacant operator's seat, thus bringing the capacity up to eleven, exclusive of the chauffeur. The bodies of the cars are finished in tan color and upholstered with brown leather, a color scheme that is in harmony with the plastered walls of the tunnel. Benjamin Cohen, the head chauff-



REAR ENTRANCE TO RIG



four at the capitol, has had considerable experience in the Studebaker factory and is thoroughly conversant with all the technical details of the machines, so that it is expected that any ordinary repairs can be made with a minimum of delay and no inconvenience to the passengers.

That the capitulation of Washington to the motoring forces is close at hand is evident from the popularity of the subway motor line as well as other indications that are noticeable. During the Roosevelt regime the motor car was shoved into the background because of the acknowledged prejudice of the chief executive, whose love for the horse is great. Still, despite this, the motor car continued to flourish and came into great popularity with the administration forces. Gradually some of the departments have succeeded in securing cars and while the adjutant general has declared he will have no more of them after the ones now in use are worn out, it is felt that by that time the motor car will be so strongly entrenched that there will be no dislodging it.

#### Taft Helps Motoring

Undoubtedly the stand taken by President Taft in the matter has been a great uplift for the industry and the fight made in his behalf in congress to get an appropriation with which to buy cars has been an immense stride forward. The discussion over this appropriation brought out the fact that some of the senators are suffering from motorphobia, but on the other hand it became evident that even those afflicted in this manner had to acknowledge that the motor car is here to stay.

Following the purchase of two cars for President Taft, the famous White house stable has been done away with. The one-story brick structure on Seventeenth street, which for so many years has sheltered the horses and carriages of the presidents, is now the White house garage. The feed bins have given place to the gasoline tank. From the pegs which formerly supported the harness now hang inner tubes and casings. Exit the coachman, enter the chauffeur.

President Taft delegated to W. C. Sterling, the Washington representative of the White company, the task of making whatever changes might be necessary to adapt the structure for garage purposes. Mr. Sterling found that all necessary alterations could be made at an expense of but a few hundred dollars, the principal item being the installation of a gasoline tank. The garage is in charge of George Robinson, who has been detailed from his duties in the war department.

#### Output of Horses

Interesting facts concerning the horse have been brought out by this discussion of motor cars by congress. It will be remembered that Mr. Bailey of Texas made a speech in defense of the horse. He said, among other things, that electric and steam motors were driving horses out of exist-



SHOWING OPERATOR'S SEAT

ence. Such remarks are often made by persons who are not aware of the facts. But the contrary is the case.

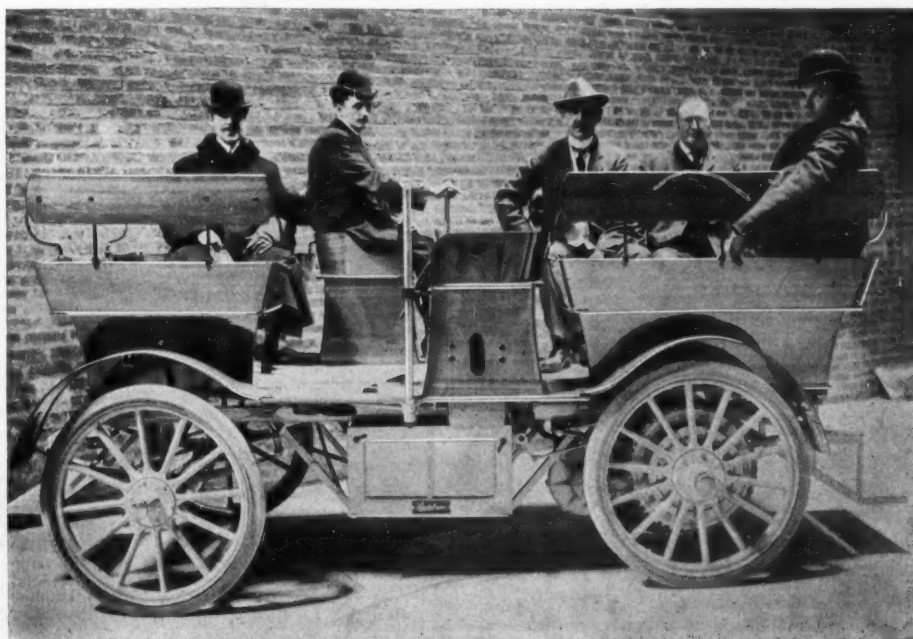
There are more horses in the United States today than there ever were before; they are worth more money than they ever were before; they are increasing in numbers and in value, notwithstanding the electric street cars, the motor wagons and omnibuses, the bicycles, the motor cars and the adoption of steam and electricity as a motor power in farming and in every business and trade that requires locomotion. The number of horses in the United States January 31, 1908, was 19,802,000 and they were worth a total of \$1,867,520,000, or an average of \$93.41 each. During the succeeding year, ended January 1, 1909, the number of horses had increased to 20,640,000; their value had advanced more than \$100,000,000 to the sum of \$1,974,052,000 and the average price was \$95.64, or \$2.23 more than the previous year. The average price of horses

throughout the United States for the 10 years previous to 1908 was \$60.25 per head, which shows that they are worth an average of \$35.40 more, notwithstanding the circumstances which senators and others have so mournfully deplored.

Motor cars came into general use more rapidly during the year 1908 than at any previous period, but notwithstanding that fact the number and the value of our horses increased more rapidly during that period than ever before. During the calendar year 1907 the horses increased 245,000 in number and \$20,952,000 in value. During the calendar year 1908 they increased 648,000 in number and \$106,522,000 in value.

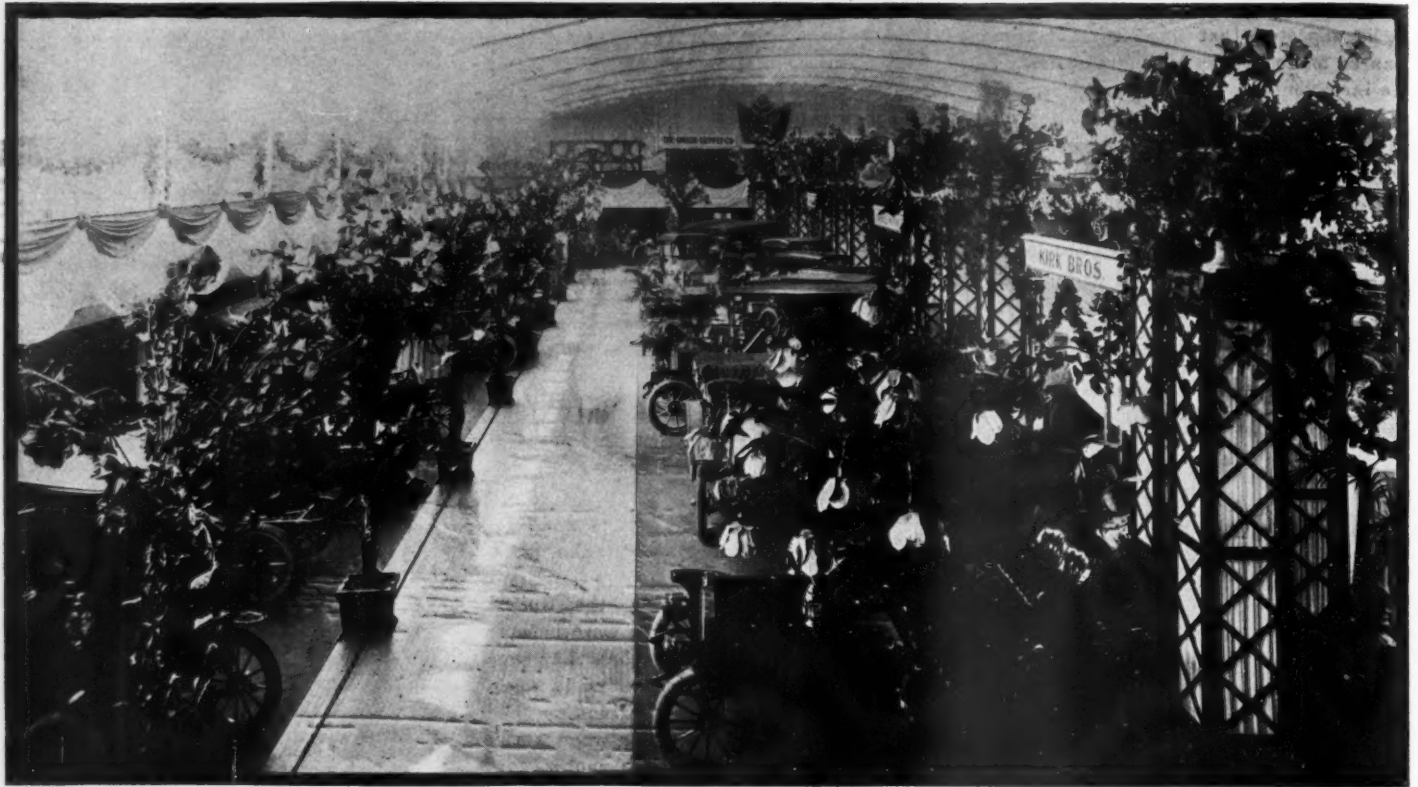
#### The Lincoln Way

All Washington motors nowadays. The diplomats representing other nations all have to have their motor stables, heads of departments are clamoring for cars and the fashion set by the president is bound to be a popular one. The streets of the capital are excellent for motoring purposes, and this in itself has done much to popularize motoring. The Automobile Club of Washington is an active body and has done much to boom touring in the way of promoting various events. Then, too, there is the move to build the Lincoln way, which will make a motoring thoroughfare second to none in the world. It is a happy conception, and to J. T. McCleary, second assistant postmaster general under Roosevelt, belongs the credit for conceiving it. The scheme is to construct a model highway from the capital to Gettysburg, a distance of 77 miles, in commemoration of the works of Abraham Lincoln. The idea is to make this Lincoln way a second Appian way, with the road 150 feet wide, running 60 miles out of Washington, at which point it will turn west two degrees, then run straight to the historic field of Gettysburg.



STUDEBAKER TUBE CAR WITH VICE-PRESIDENT SHERMAN AS A PASSENGER

# AUSPICIOUS OPENING OF THE TOLEDO SHOW



FLORAL EFFECTS SECURED BY PROMOTERS OF THE TOLEDO SHOW

**T**OLEDO, O., March 22—When the Toledo dealers' third annual show opened at the Coliseum this evening new blood was infused into the life of trade. Business in the motor car line had not been dull during the week preceding the show, however, many new prospects being secured by the dealers. Not so many deals were closed, though, the prospective buyers holding off until show week that they might have an opportunity of viewing the lines of other manufacturers before reaching a final decision.

Early indications are that the show of the present week, which is by far the best ever held in this vicinity, will attract big crowds, both afternoon and evening, and that much good will result to the dealers therefrom. Not only will the local attendance be large, but a goodly representation of enthusiasts from all over northwestern Ohio is expected. Quite a number of sub-agents from all parts of northwestern Ohio are already on the ground, looking for cars, and they report that many prospective buyers from their home towns will be in during the week.

## Draws From Big Territory

The territory covered by Toledo agents is much larger than might be expected, considering the proximity of Cleveland and Detroit. They cut little figure, however, in the territory to which industrial Toledo looks for its trade, Toledo being fortunately situated as a railroad and interurban railway center of no mean magnitude, a network of roads penetrating into

thickly-settled territory containing numerous live towns and little cities made up of prosperous people. Toledo is their trade center and it is to Toledo they come when they have buying to do. To the east the trade extends to Fremont; on the south to Lima; on the north to the state of Michigan, and on the west to Indiana.

In addition to the cars being shown at the Coliseum, Toledo dealers are also

exhibiting different makes in the lobby of the Boody house, Toledo's oldest and best-known hostelry. In this they have more than a single object, for the week of March 22-27 is not only motor car show week in Toledo, but is also spring opening week of the retail merchants, backed, boosted and advertised by the chamber of commerce, which campaign will bring many visitors and buyers to the city during the week.

## Decorations Are Elaborate

At the Coliseum the decorations for this year's show are something elaborate, and are patterned closely after the decorations that created such favorable comment at the recent Cleveland show. Neither pains nor expense have been spared by the association to make it, in appearance, one of the most attractive shows of the year. In addition to this every local dealer has tried to out-do his fellow in making beautiful the space allotted to him for the exhibit of the different makes of machines he handles.

The show proper occupies the entire ground floor of the Coliseum, with the big display of every description of accessories in the balcony. On the main floor there are thirty-seven different makes of cars and over four score in number—everything from light runabouts to monster touring cars, with delivery cars and motor trucks to vary the displays—electric cars, gasoline cars, steam cars, cars that will suit milady, cars for the business and professional man, cars for touring and sight-

## Toledo Show Exhibitors

Atwood Auto Co.—Stoddard-Dayton, Premier, Overland and Waverley electric.  
H. J. Adams—Reo, Kisselkar.  
Twenty-first Street Garage—Detroit electrics and Jackson.  
MacInnis Brothers—MacInnis electrics.  
Gramm-Logan Motor Car Co.—Gramm-Logan trucks and delivery cars.  
Harry Overmeyer—Glide.  
Lichtie Automobile Co.—Winton, Cadillac.  
C. Z. Kroh Mfg. Co.—Tops.  
Roberts Toledo Auto Co.—Ford.  
Standard Auto Co.—Brush, Hupmobile, Jewel.  
Union Supply Co.—Chalmers-Detroit, Union Jack motor cycles and accessories.  
Central Auto Co.—Maxwell, Mitchell.  
Olds Motor Co.—Oldsmobile.  
Buick Motor Co.—Buick.  
Gamble Motor Car Co.—Baker and Rauch & Lang electrics, Stearns, Peerless.  
Kirk Brothers Auto Co.—Thomas, Knox, Studebaker-Garford, E-M-F and Columbus electric.  
White Co.—White steam cars.  
Apperson-Toledo Co.—Apperson-Toledo.  
Matheson Sales Co.—Matheson.  
J. W. Whitcomb—National.  
Banting Auto Co.—Cartercar.  
W. O. Diver—Rambler.  
Accessories—Dayton airless tire, Miller Brothers Storage Battery Co., Universal Tire Protector Co., Globe Oil Co., Reading Standard motor cycles, Rubber Life Co., Toledo Rubber Co., Paragon Refining Co., Toledo Vulcanizing Co., M & M motor cycles, Atwood Auto Co., Union Supply Co., Wilmington & Co., Keeler Storage Battery Co., Eberman power pump, Oberwegner Motor Co. and Acme Rubber Co.



seeing, cars for speed and cars for comfort, cars with various styles of body and cars without, and live salesmen and factory experts and demonstrators on every hand to explain the merits of the different makes.

#### Public Interest Keen

Public interest in the show is not in the least lacking, even the uninitiated talking show and counting on at least one or more visits to the Coliseum. Society folk especially are deeply interested and quite a few have arranged to visit the shows in parties, the show being used as a sort of entertainment the same as any big attraction at the high-priced theaters. Business houses, hotel men and others are also boosting loyally for show week and everywhere are to be seen show cards, posters and banners in prominent display announcing that a motor show is being held. In fact the show is being given encouragement and assistance on every hand.

That the show is due to meet with popular approval was demonstrated this evening when the doors were thrown open for opening night, the attendance far exceeded all expectations, and when the visitors to the show entered the Coliseum they found the interior of the building transformed into a palace of beauty, and the hand of the artist in evidence everywhere. Attractive alone does not express every detail of the adornments of the interior. Here and there a splash of coloring made the whole hall look like a fairy bower, in addition to which there were numerous individual floral displays to add to the effectiveness of the whole. One feature of the decorations, they are all fireproof.

### Denver-Chicago Scouts Finish Hazardous Trip

Chicago, March 24—George Smithson and W. H. Ewbanks, Jr., who left Denver March 2 in a Studebaker carrying a message from the Denver Motor Club to the Chicago Automobile Club and also a letter from Denver's chief executive to Mayor Busse, of Chicago, reached Chicago this morning after one of the toughest runs of the winter. The trip was undertaken to boom Denver for a place on the Glidden circuit, but a blizzard upset the plans. "Everything was fine while we were en route to Julesburg, Colo., thence along the Platte river valley to Omaha," says Smithson. "The roads were dusty most of the way and the weather was grand. But everything changed when we left Omaha and passed through Council Bluffs. A belated Dakota blizzard set in. On stretches of road from Denison to Marshalltown the drifts were from 2 to 5 feet deep. The trains had a hard time bucking the snow—we had the time of our lives fighting through. After passing through the Arctic conditions in western Iowa, we struck the mud east of Cedar Rapids and made slow progress. Yesterday afternoon we were in Sterling. The remainder of the trip was so much better."

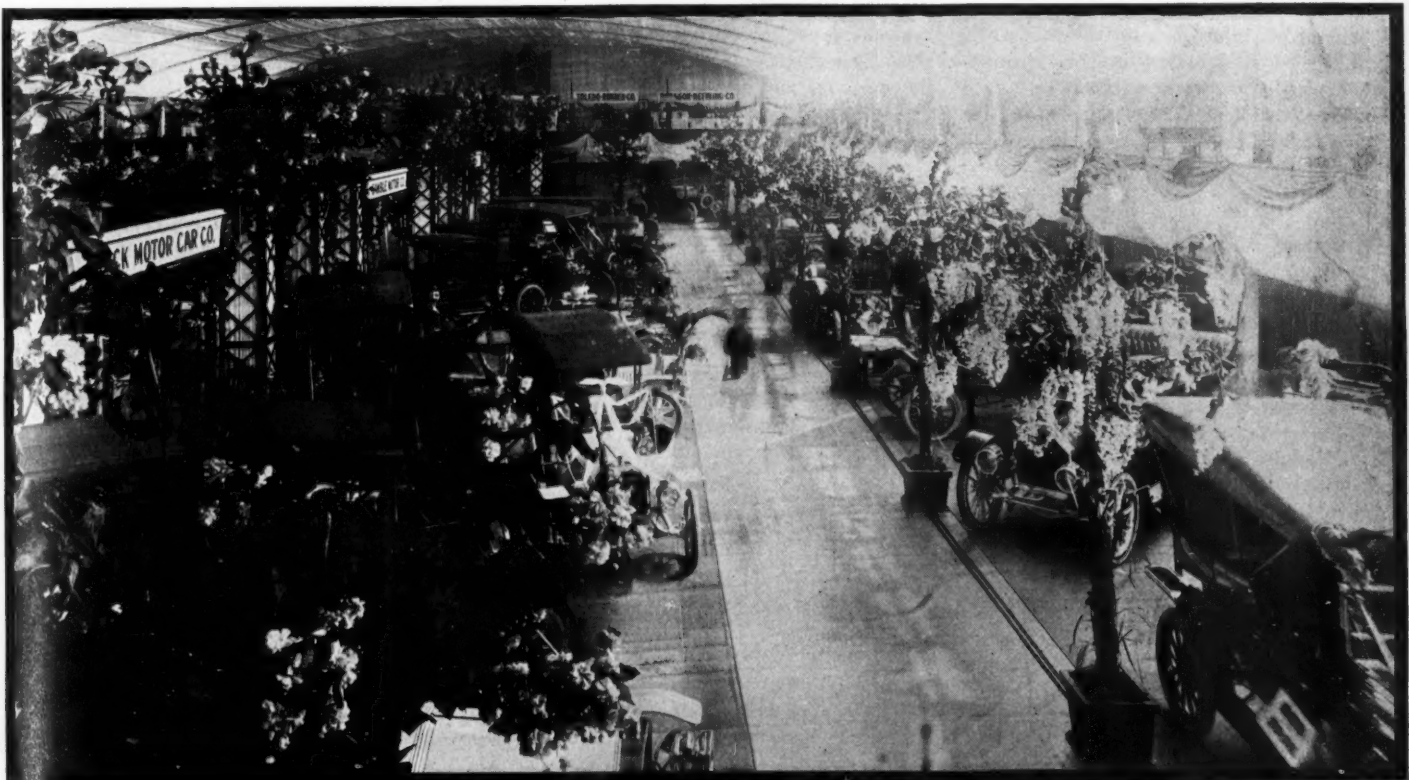
#### FUNERAL OF LEON THERY

Paris, March 11—The funeral of Leon Thery, winner of the last two Bennett cup races, was held today and was impressive in its simplicity. So great was the floral tribute from friends and admirers that a

delay of half an hour was caused, this time being required to get extra flower bearers and a special cart. Among those who followed the flower-bedecked hearse were Henri Brasier, Henri Fournier, Bertin, Szisz, Le Blon, Osmont, Schille, Maurice Fournier, Gabriel, George Heath, Duray, Rougier, Salleron, George Prade, H. Desgranges, Faroux, Teste, Rigal, G. Dupuy, Rene de Knyff, Max Richard, Muller, Caillois and many other sportsmen and tradesmen. At the grave Brasier said adieu to his former color bearer, and his speech brought tears from the large gathering. Les Sports, the daily sporting paper, has started a subscription for the purpose of erecting a commemorative bust upon Thery's grave. This subscription in 2 days has reached 1,481 francs.

#### NEW LAMP CONCERN

Detroit, Mich., March 22—A new concern has been added to Detroit's motoring industry, the C. M. Hall Lamp Co. having filed articles of incorporation last week. A two-story factory building has been secured at Rivard street and Hancock avenue, which formerly was occupied by the United Lubrication Co., the building affording 20,000 feet of floor space. The lamps will be manufactured from designs originated by Warren French, for 12 years designer at the Badger Brass Co., of Kenosha. Of the company's \$150,000 authorized capital stock, \$100,000 is already subscribed and paid in. John W. Leggett is president; Thomas J. Wetzel, vice-president; J. F. Hartz, treasurer; C. M. Hall, secretary and general manager, and D. M. Newbro, John L. McDonell and E. H. Broadwell, directors.



ONE OF THE AISLES IN TOLEDO'S SHOW, GIVING AN IDEA OF THE DECORATIONS

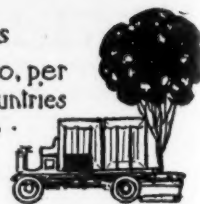


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## Government Recognition of Motor Cars

THE Washington government has not given to the motor car that support which a new method of transportation deserves, or has that government given even a semblance of support compared with the financial and legislative aid that have been rendered by many of the governments of Europe to their motoring interests. For the last 7 years the horse has held the center of interest in the White House zone, but with the installation of the Taft regime the motor car has come in for official recognition, no less than three of them having been purchased for the president and vice-president. Still further a motor car subway line has been opened between the capitol and the senators' headquarters, a distance of one-third mile, and in which subway electric motor cars run, these vehicles being specially designed for the work. The war department has used motor car ambulances for some time, and cars have occasionally been tried out in military maneuvers. Aside from this the active force of the government has not been arrayed on the side of the motorists.

AS to what recognition the motor car should have received in Washington is not a matter of whether the president or vice-president use cars for his own individual needs, or whether the speaker employs one to transport visitors between the capitol and White House. Such patronage of the car would only represent a business investment and not indicate any great interest of the government in cars. An idea of what governmental assistance means can be grasped from an analysis of European facts as they have unrolled themselves during the past few years. To begin: whenever troops were needed to guard a highway for a road race, speed trials on the flat or a hillclimb, those troops were always provided, and not infrequently one or two of the higher officers of state were officials, having been appointed with the sole provision of making official reports to the heads of government departments on the efficacy of motor cars for certain works. The result was that the utility of cars reached the ears of the president and his ministry through personal channels, and the president was not slow to place his official stamp of recognition on the machines.

NOTHING in France has administered so favorably to the advance of the commercial car as the conducting of long commercial vehicle tests, in which the head of the militia, or his immediate representatives, were officials, and in some cases where army men rode on each of the trucks through the entire contests. In addition it was an understood fact that the army stood ready to purchase from twenty-five to fifty of the trucks making the best showing under the strenuous conditions of the test. This fact alone stimulated interest among the makers, it commanded the attention of industrial France and the motor car received an introduction that would have required a decade or more without the stamp of approval of the government and the immediate attention of its officials.

WHEN the motor bus suitable for public transportation in the streets of cities and for rural stage work came upon the scene France was not slow to recognize it, and the tests instead of being solely under the jurisdiction of the motoring interests were supervised by the heads of transportation departments of the big cities, with the object of specially studying the merits and shortcomings of the bus for different fields. So with the taxicab. So is France with the aeroplane today and so has she been with airships for several years.

THE result of all this recognition has been a quick perfection of the car design and its adaptability for certain uses, as well as a phenomenally rapid introduction into all of the cities of the land. In America on the other hand the manufacturers had to withstand the entire expense of introduction, and have not infrequently had to fight the government to secure a semblance of favorable legislation. What America has done to the motor car it gives good promise of doing to the aeroplane, and although an American has built an aeroplane that so far has eclipsed anything built by the foreigner, that American has had to go abroad to dispose of his invention and has been experimenting with and demonstrating a home-made machine in the courts of foreigners.

WHAT has been the outcome of this lack of government support in the motor car field? This is best answered by a comparison of what progress has been made abroad, where government support has not been lacking in comparison with conditions in America, where there has not been any material aid. In France, England and Germany as well the commercial car has been rushed to a state of perfection by many of the leading concerns of the land, whereas with us the industry is still in an uphill fight, with very few of the high grade car builders having actually entered the field at all. On the other hand had the Washington government agreed to purchase for army use, for the hospital and transporting of soldiers, ammunition or provisions so many cars that won certain tests made under government inspection it is certain the biggest manufacturers would have immediately busied themselves with the designing and building of cars best suited for American industrial conditions, and the commercial end would as a direct result be in immeasurably better condition than it is.

THE fact that France demanded commercial tests over all roads of the country introduced the business car to cities and manufacturing centers that for 10 years or more might have remained dormant to the possibilities of the gasoline engine in the industrial world. The use of cars for transporting soldiers over varied land surfaces during the annual maneuvers of the army has led to the installation of many lines of motor buses in sections of the country where railroads are wanting, and where it has been deemed impracticable to operate regular stage systems. America has conducted but one test of commercial cars, and that nearly 5 years ago, and which test embraced but one large city and its suburbs. The fact that more tests have not been conducted in this country cannot be laid at the doors of the government, the motorists could have conducted them had they desired, but the fact remains that had the government taken a kindly and early interest in the matter the results would be far from what they are now. It is a certainty that just as soon as the government takes a direct interest in a new method of transportation the widespread attention of the nation is focussed on that industry, and the lesson of laxity that the Washington government must have learned regarding its attitude towards motoring is sufficient to have appointed a special commission with duties confined to keeping a watch on the great industrial trends with the object of lending aid, if not financially, then by bringing such to the attention of the public, to those industrial enterprises that affect transportation in every form or other enterprises of a different bearing, but which are so universal as to have a bearing on practically all of the population. The watchfulness is carried out in foreign lands and could be well done in America. It is time a start was made.



# DEVELOPING AND MAKING OF MOTOR CARS

By E. P. Chalfant

General Manager A. L. A. M.

It is well known that the past 10 years has seen a revolutionary change in the design and construction of motor cars. Hardly 10 per cent of the American factories now producing motor cars could have been considered as running systematized organizations 10 years ago. Following the example of the motor car, horse-drawn vehicles for city use are now shod almost universally with rubber tires. As to locomotives, considered as a fair basis of comparison, their development to have begun in 1825, after the experimental stage was over. From 1825 to 1875 the locomotive experienced no greater development than has the motor car in its first 10 years. As to the coach industry, no 50 years of its history ever showed a development as rapid as that of the motor car in the last decade.

It is pretty generally acknowledged that down to a certain point, unit production is more properly indicative of manufacturing development than value of product. As to comparative numbers produced in the field under discussion, not until 1889 had one of our locomotive manufacturers produced its ten thousandth locomotive. The same manufacturer completed a second 10,000 of locomotives by 1902—58 years for the first 10,000 and 13 years for the second 10,000. Incidentally, it took 30 years to produce the first 1,000.

Starting from practically nothing, a number of American motor car plants have each produced over 10,000 machines since 1902.

The relative amount of credit due different countries for the development and production of the motor car should be clear. Yet the subject is not fully understood and repeatedly befogged by articles written by persons apparently unfamiliar with the facts.

While Selden's patent was pending, and some years after its filing, Benz, and then Daimler, in Germany, from whose work European motor car development resulted, started their work and made vehicles embodying all the essential features of the Selden invention. In due course Selden's patent was issued November, 1895. And after the long scrutiny given his application to the United States patent office, upon the issue of the patent, the commissioner of patents referred to it in his current annual report in the following language: "Selden received a patent which may be considered the pioneer invention in the application of the compression gas engine to road or horseless carriage use."

To say as a generalization that the American car followed the design of the foreign car is wrong. There are many motor car elements which originated in America and have been used abroad. As early as 1898 and 1899 American makers of cars included the arrangement of vertical cylinder engine in front. While at

that time some of the well-known makers of foreign cars had the engine under the seat or horizontally arranged; the position of the radiators being frequently in the roof of the top, or under the car. Then foreign voitures had the motor mounted in odd fashion, in different ways in the rear of the car, on or close to the axle. The small car originating in America, acknowledged as having been the stimulus of quantity production, was copied by European makers.

The features which have been gradually accepted in design generally can, of course, be traced frequently to some claimed foreign source. The student of the subject finds but a natural development of construction, in many elements the product of American brains and ability. As a result of several years' work by the best men, a popular design for large cars has resulted. We also now have a substantially standard arrangement in small cars, wherein features most largely the production of American engineers are dominant. Incidentally, among other things the Americans were the first to introduce both aluminum and nickel steel into motor car construction. The first extensive use of vanadium steel is also due to Americans. Electric ignition was used on American cars as early as 1893; the French did not introduce it until 1896, and then only on a few cars. America preceded Europe by using magnetos for electric source of ignition in 1897. Con-

tinuous throttle control of the motor was first used in this country, anticipating Europe. American machines of quiet-running qualities were very early conspicuous by comparison with foreign machines.

For perfection of design appropriate to the load and conditions of employment, for excellence of material and sound, accurate workmanship, American-built motor cars cannot be beaten anywhere in the world. American machine tools, it is admitted generally, lead the world.

## "Father of Motor Cars" Dead

Boston, Mass., March 22—William W. Austin, who was known in Massachusetts as "the father of the motor car," died at Winthrop, Mass., a few days ago. He was 85 years old and for some time he had been working upon a gasoline lamp in which a number of prominent New Yorkers were interested. The steam bicycle which he invented many years ago is now at Winthrop. It resembles the old time bicycle and under the seat is a water tank and hanging down from the frame is a large tank resembling a big milk can. This served as a boiler. From the top of the boiler a pipe extends above the seat, this being the smoke stack. The tubes of the boiler are made of 125 rifle barrels. The bicycle is controlled by the handles. In a race with a horse on a Long Island track many years ago Mr. Austin covered a mile in 53 seconds. He drove it around New England and made much money. He tackled the air-ship problem, but gave it up when the idea of the gasoline lamp came to him, the secret of which died with him.



AUSTIN STEAM BICYCLE THAT MADE MILE IN :53 MANY YEARS AGO

# BENZ CARRIES OFF SPEED HONOR AT DAYTONA

DAYTONA, FLA., March 24—Special telegram—The annual beach meet which opened yesterday is somewhat shy in the way of entries, but the cars that are running are putting up some good time. Today's runs produced new records, made possible by a magnificent wind blowing straight up the course. Two of these, the 5 and 10-mile, went to Hugh McIntosh's Benz. In the 5-mile invitation, Robertson drove the Benz, winning in 2:45½ from the Fiat Cyclone, breaking both the steam and gasoline car records for distance. In the 10-mile free-for-all, Bruce Brown drove the Benz, winning from Fiat in 5:16½. The Fiat made a close run with half the horsepower, 29½ seconds separating them.

In the motor cycle record trials Walter Goerke made an amateur mark for 2 miles,\* doing 3:30½. The southern 5-mile price handicap was won by a Pope-Hartford, with a Cleveland second and a Locomobile third. Folger won the ½-mile bicycle race in :47½—a new record; also the 2-mile in 3:45½.

The big Hemery Benz, of Savannah fame, made fast traveling, averaging as it did 108.9 miles per hour in the 5-mile invitation race. Fast as this was, it was able to do still better, raising this average to 113.7 in the 10-mile event. So far this has proven to be the fastest performance this year and is approaching very close to the 2-mile-a-minute mark. In the 10-mile race the Fiat Cyclone made a most remarkable performance considering its small horsepower, averaging 104 miles an hour, which is high speed for a 60-horsepower machine. In the 100-mile stock car race of yesterday Strang's time was 63.8 miles per hour. In the trials at the amateur record today the big Benz in the hands of David Brown, the boy driver, made 109 miles an hour, and De Palma pushed the Fiat Cyclone over this distance at a 100-mile-an-hour clip.

## Brown Beats Amateur Mile

Daytona, Fla., March 23—Special telegram—A rapidly racing tide cut short the program of the first day's events, the star performance of which was David Brown's lowering of the world's amateur record for the mile to 33 seconds flat. The previous record was :35½, made by Brown last year. Today he drove the Benz 120-horsepower racer that finished second at Savannah last fall and in his third attempt at the mile for the Dewar trophy bested his record for the third time. In his two previous trials his time was :33½ and :33½ respectively. De Palma's Fiat Cyclone was the other competitor. Its best time was :36, a remarkable performance, considering the Fiat had but 60 horsepower.

Monday's high wind has put the beach course in fine shape, but the water is exceptionally high. This made the races late in starting. The 200-mile stock car race

brought a Cadillac with Lytle up and three Buicks with Burman, Strang and Dewitt as pilots. Burman led the first round of 20 miles in 18:17, closely followed by Strang. On the second lap Burman had carburetor trouble and was out of it. Strang took the lead and held it to the end of the race, 100 miles, high water necessitating cutting the original distance in half. This time was 1:34:01½, which was more than 20 minutes slower than the Renault time last year. DeWitt was second, 10 minutes later.

Walter Goerke, of Brooklyn, captured the honors in the motor cycle time trials for the mile, making a new amateur record of :45½, breaking the former record of :46½.

## Monday On the Beach

Daytona, Fla., March 22—Interest in the races is at fever heat today and the early morning brought out a goodly throng to witness the practice work on the beach, which at this writing promises to be particularly fit for the contest of tomorrow, Wednesday and Thursday. A rather stiff northeast breeze sprang up as if by magic about 11 o'clock, which, continuing during the day, promises, according to the knowing ones, to iron out the water-washed sand to a surface as hard and smooth as a billiard table.

Four classes of sport, representative, and kindred to the development of the motor car, are incorporated in the program—motor car races, motor cycle races, a series of contests with the time-honored bicycle, and experimental flights with the Bates aeroplane. The last-mentioned is the production of Carl R. Bates, of Chicago, who has erected an aviation shed on the beach to house his new air conqueror. The weather man so far has been in league with King Boreas, and brisk breezes have prevented a satisfactory trial, much to Inventor Bates' disgust.

The heavy practice work of today was done by David Bruce Brown in the Benz, the racing car recently purchased by Hugh McIntosh, the well-known Australian sportsman, now visiting in this country and here to witness the races. Brown is the pilot for the car in the amateur events, and George Robertson, who won the Vanderbilt cup last year, is handling the wheel for the professional purses.

Ralph de Palma, in the Fiat Cyclone, limbered up by making long runs to the limits of the course, which this year does not include any portion of the beach at Ormond, 10 miles to the north. The grand stand is located directly in front of the clubhouse of the East Coast Automobile Association, and the course extends north from this point to a turning flag just south of the pier, and southward 10 miles to the lighthouse, where another turn is made.

All the hotels are filled to overflowing,

and people from all parts of the country have made it a point to stop over on their return north from Cuba and southern Florida to attend the races.

## ERIE COUNTY'S ROAD BOOM

Buffalo, N. Y., March 21—Many motorists attended the fourth annual good roads convention held at the rooms of the Erie county board of supervisors at the city hall Friday and Saturday. George C. Diehl, Erie county engineer, who is also chairman of the good roads committee of the American Automobile Association, was among the speakers. Mr. Diehl explained that the object of the meeting was to instruct town officers in their duties under the new highway law. The county engineer exhibited some maps which he had prepared showing state and county roads in Erie county. He explained how residents of towns could exert their influence to have the roads selected as state and county roads which would carry the greatest volume of tonnage and serve the largest number of people. In concluding, Mr. Diehl referred to the great aid which the Automobile Club of Buffalo had given to the good roads work in Erie county. He explained how at present the board of supervisors, representing in part the farming community of Erie county, is working hand in hand with the organized motoring association to secure good roads for Erie county. Mr. Diehl said the New York state highway commission's examination of roads and the effect of the chained or armored tires on them was not to antagonize motorists and keep them off the highways, but to see if a road could be constructed that would stand the traffic. Milton W. Wilbur, division engineer, declared that something had yet to be devised in the way of road construction that would prevent motor cars running at excessive speed from picking up stones from the surface of roads and tearing the roads to pieces. Mr. Wilbur paid a tribute to the motorists who had spent their money for the improvement of the highways.

## DISTRICT BECOMING STRICT

Washington, D. C., March 23—Special telegram—District commissioner West today suggested to the board of commissioners two new regulations—to deprive reckless drivers of their permits to operate cars, and to require local motorists to remove all out-of-town numbers when within the District of Columbia. The necessity for the regulation was brought to his attention by a member of congress whose experience with a reckless chauffeur on Connecticut avenue led him to make a complaint. Investigation, it is said, showed that the machine was owned and operated by the son of one of the foreign ambassadors, and the case was brought to the attention of the state department.



# OPENING WEEK ENTHUSES INDIANAPOLIS

INDIANAPOLIS, IND., March 23—The weather man has added the finishing touch necessary to assure the success of the third annual opening and show of motor car dealers and manufacturers, which opened here yesterday. Every salesroom, garage and factory in the city will keep open house all week and a number of public events will be given under the auspices of the Indianapolis Automobile Trade Association.

It is an interesting fact that during the last 3 years the growth of the local motor car industry has been so rapid that it has exceeded the city's facilities for a motor car show under one roof. Tomlinson hall, the only building that might be large enough, has its auditorium on the second floor and has no elevator facilities. The auditorium at the state fair grounds is believed to be too far north to attract prospective motor car buyers in sufficient numbers.

It was partially to meet such a problem as this that the trade association was formed more than 2 years ago. As a result of this association, each dealer and manufacturer exhibits in his own establishment while all unite in public events throughout the week. In these public events, individual owners are also invited to participate.

## Is a Business Proposition

Opening week is essentially a business proposition—a campaign of sales. For 6 days every dealer and every manufacturer has on exhibition each model he sells or manufactures and has extra salesmen to explain the merits of the respective cars to prospective purchasers. Ample facilities are provided for demonstrations and it is not believed the police will be overzealous during the week in enforcing the speed laws.

As usual there are a number of new agencies that were taken just before show week and these cars will be shown by the local agents for the first time this week: Charles W. Sheetes & Son, Lambert; Stirling Motor Car Co., Petrel and Firestone; Indianapolis Motor Car Co., Hart-Kraft commercial cars; Indianapolis Automobile Co., Gyroscope; Fisher Automobile Co., Empire and Baker, and J. E. Smith, Plymouth commercial cars.

The new uptown salesroom of the Nordyke & Marmon Co. in the Central Union Telephone building was thrown open for the first time last Saturday. It is in the charge of C. E. Gambill and seven models are displayed. The establishment is an exhibition and sales room only, no facilities being provided for garage, repair or storage purposes. However, the company will have a garage near the salesroom shortly.

All of the local agencies are decorated for the week. The Indiana Automobile Co. has huge streamers made up of the

flags of all nations and in the main salesroom hangs a large golden eagle, with long festoons of small flags emerging from its mouth. The company handles the Thomas, Peerless, Autocar and Franklin.

An orchestra has been engaged for the entire week by the Buick-Losey Co., which devotes its attention exclusively to the Buick. Flowers form a principal part of the decorations and five silver trophies that have been won by Buicks are shown.

The Indiana Carriage and Automobile Co. has used tulips and Easter flowers in its decorations; Finch & Freeman have made generous use of cut-flowers and palms and a piano furnishes music. Flowers are given to women and cigars to men, as souvenirs.

## Uncle Sam Advertises E-M-F

At the Willis-Holcomb Co.'s building, white sand covers the floor while a cheerful fire burns in an open fireplace. The walls are decorated with flags and pictures while the cars on exhibition are decorated with ribbons. As an advertising feature, the company has an 11-foot Uncle Sam on the streets, advertising the E-M-F as "head and shoulders above them all."

The front of the salesroom of the Gibson Automobile Co. is banked with Easter flowers and potted plants. The company sells the Marion, Premier, Ford and Reo.

Ferns, cut flowers, bay trees, boxwood and palms have been used by the Hearsey-Willis Co. and these are intermingled with the Rambler, White and Mitchell cars that are shown. Large placards are shown on which is engraved the mechanical features of each car sold.

The State Automobile Co., agent for the Oakland, has decorated with palms and flags; the Stirling Motor Car Co. has similar decorations.

National colors are used in the decorative scheme of the Fisher Automobile Co. As an additional attraction the company has built an incline running from the street to the top of its three-story building and this is being used to show the hill-climbing abilities of the National, Stoddard-Dayton, Overland, Maxwell, Baker and Empire cars that are sold.

The Indianapolis Motor Car Co., which handles commercial cars exclusively, is showing a large line of Rapid and Hart-Kraft commercial cars. As a special attraction, it has a Rapid delivery wagon made in 1903 which is still in active service, being owned by the Jaques-Bogan Packing Co., of Lafayette.

One of the principal features of the week will be the parade tomorrow afternoon, in which it is expected several hundred motor cars will participate. It will form at North Meridian street and the Fall Creek boulevard and will proceed over the principal downtown streets. A squad of bicycle police, the police gasoline patrol wagon and other police cars containing

city officials and the new Waverley ambulance, purchased by the city for the city dispensary, will lead the parade. Following this will be the Indianapolis military band of more than twenty pieces riding on a Rapid truck.

Each dealer will then follow with one each of every model of the different makes he represents and the manufacturers will be represented in a similar manner. Every car will be filled with its full quota of passengers. Following the display by the dealers and manufacturers, individual owners will fall in line with their cars.

One of the principal attractions will be the commercial car section in which the Indianapolis Motor Car Co., Cadillac Automobile Co. of Indiana, the Waverley Co., Buick-Losey Co., Coppock Motor Car Co. and J. E. Smith, representing the Plymouth, will have a large number of entries.

The Indianapolis Motor Car Co. will have fifty Rapid trucks and delivery wagons in line. Some of the trucks will be loaded with children from the Orphans' homes. Others will be loaded to their full capacity with merchandise, and laundries, wholesale and retail grocery and dry goods concerns, plumbers, dealers in mill supplies, milk companies, cigar distributors, undertakers and carpet and furniture companies will be represented by their cars.

Permission has been granted by the board of park commissioners for the use of the North Capitol avenue boulevard for events today and Thursday.

## Contests on Boulevards

The week will close Saturday night with a "joy dinner" or banquet at the Denison hotel and everyone interested in motor cars will be invited to attend. The price will be \$1 a plate. Mayor Bookwalter and other city officials will attend, and the mayor, who is an enthusiastic motorist, having formerly been interested in the Marion Motor Car Co., will be the principal speaker.

The first of the public events were held this afternoon on the North Capitol avenue boulevard, when probably fifty people participated in a tire-changing contest and combination egg and obstacle race.

In the egg and obstacle race, the young women were required to carry an egg in a spoon in one hand and a parasol in the other. The course was one square and return, with 2 by 4 strips of lumber every 25 feet.

Winners in the tire-changing race were: Edgar Apperson, with an Apperson Jack-rabbit and Diamond demountables, time 1:43; T. K. McCune, with an Auburn and Goodrich quick-detachables, 2:09; Charles Starr, with a Premier and Diamond clinchers, 2:49.

Winners of the egg and obstacle race were: Mr. and Mrs. Peterson, in a Buick, :33½; Mr. and Mrs. Thomas Kincaid, in a National, second, time :35.

# CHICAGO'S ROAD RACE TO BE WESTERN EVENT

CHICAGO, March 22—The trophy offered the American Automobile Association by Ira M. Cobe, president of the Chicago Automobile Club, for a national stock chassis race has been withdrawn and instead of promoting a national event the club has decided to put on a western stock chassis race, the cup for which will be given by Mr. Cobe. At the present time Mr. Cobe is preparing a letter to be sent to the A. A. A. in which he will outline his reasons for withdrawing the trophy as a national cup and which had been accepted as such by the meeting in Boston during the show. The contention of the Chicagoan is that one of the clauses of his deed of gift provided for the national race being run within 50 miles of Chicago this spring, but that it is impossible to carry out this provision because no one in Chicago is willing to undertake the promotion of such an event because of the restrictions.

Chairman Hower's visit to Chicago last week brought matters to a climax. When the race was first broached here few understood what it meant to run a national road race, so all were enthusiastic over the proposition. The route had been picked out, entries solicited and an organization perfected and it looked as if everyone would work hard for the success of the race. But when Chairman Hower came on and explained that it was to be an A. A. A. event pure and simple, and that the national organization would control it all the way there came a change of opinion. The local workers objected to doing all the preliminary work, such as financing the race, preparing the course, building the grand stand and the like and then dividing profits with the A. A. A. and letting it name the officials, make the rules and take the credit. Then there was a revulsion of feeling. Some of the executives chosen by the local club balked and refused to work under such conditions and

the directors of the club themselves could not see any possible benefit to be derived from such a partnership. Therefore Chairman Hower was requested to come on and talk it over.

Several sessions with the chairman of the contest board were held, the deciding one being held last Thursday, at which time it practically was decided to give up the idea of running a national race. President Cobe, however, was out of the city, so it was not until Friday that the decisive action was taken. Mr. Cobe looked at the matter in the same light as did his colleagues on the board and by a unanimous vote it was settled that the Chicago Automobile Club should not undertake the promotion of the Cobe trophy national stock chassis race. Instead President Cobe announced that he would withdraw his deed of gift and hang up a cup to be competed for in a western stock chassis race which the club would put on.

Following this decision the directors and the contest board discussed the plans for the western derby. It was held that May 29 and 31, the dates selected for the light car race and the Cobe event, would not do for the new idea. It was pointed out that the weather is too unsettled the latter part of May and that the roads, too, would be in poor condition compared with what they will be a month later. Also under the new conditions a little more time was needed to perfect the organization. Therefore, the board changed the dates to Friday and Saturday, June 18 and 19. On the first day will be run a race for light cars at probably 200 miles, while on Saturday the main event at about 400 miles will take place. As soon as the necessary formalities, such as providing for the guarding of the course and the securing of the permits to use the roads, are gone through with an application for a sanction will be made to the contest board of the A. A. A. Chairman Hower has promised to push

through the rules as soon as possible, going from here to Detroit, where he had a conference with H. E. Coffin, chairman of the rules committee of the Manufacturers' Contest Association. Piston displacement will be used in dividing the fields.

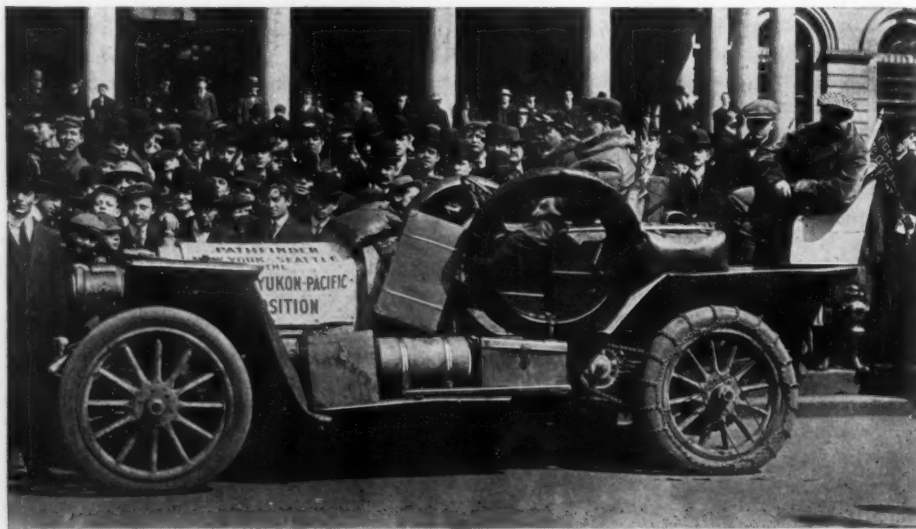
The announcement of the decision to run a western road race stirred to enthusiasm many members of local organizations and as a result of this there was a joint run of the Chicago Automobile and Chicago Motor clubs last Sunday, the combined forces making the trip to Crown Point in the vicinity of which is located the course over which it is proposed to run the two races.

## PATHFINDER AT WORK

Chicago, March 24—It is expected that the New York-Paris Thomas that is laying out the route for the New York-Seattle endurance run will pass into Ohio today on its way west, having left New York last Saturday. The route that the car is following is from New York to Poughkeepsie and Albany, thence through Schenectady, Rochester and Buffalo to Erie and Cleveland. At Cleveland, a modification of the original route will be made and a more southerly path tried. This will lead through Indianapolis and St. Louis and thence to Kansas City and Denver. By this means the black gumbo will be avoided. From Denver the route proceeds to Granger, Wyo., after which the route has again been changed in order to take advantage of the recent action of the Washington state legislature, which has appropriated \$120,000 toward making and repairing the roads in eastern Washington over which the contestants will travel.

## COAST-TO-COAST ROUTE SET

Tacoma, Wash., March 18—The route of the transcontinental race for the Guggenheim trophy between New York and the exposition in Seattle has been definitely fixed. Acting on the promise of the state and county road commissioners to have the roads in good condition along the route, the committee has decided to bring the race over the Snoqualmie pass, and leaving Mountain Home, Idaho, the cars will pass to the north, crossing the Oregon border at Ontario, and continuing through La Grande, Ore. The route also passes by way of Walla Walla. County commissioners have communicated to the committee their intention to put the roads in good condition, and to that end have promised to go over the roads in motor cars that the committee will provide, and wherever it may be necessary to improve conditions such improvements will be made. This route once established will mean its maintenance as a permanent transcontinental route from ocean to ocean. To avoid conflict with the Glidden tour the race will be started from New York May 20, 10 days



NEW YORK-SEATTLE PATHFINDER THOMAS STARTING FROM NEW YORK



previous to the date originally proposed. San Francisco interests have made a bid for the route to pass through that city, and the offer was made to the management to give another trophy of equal value with the Guggenheim cup and to double the cash prizes if the route would be changed to include San Francisco in the itinerary. The offer was discussed at the last meeting of the committee and a telegram was sent to Manager Moore advising him to accept no offers of change in the route and to proceed with preparations to carry the race direct to Seattle over the route settled by the committee at its last meeting. One of the important duties of the pathfinder cars will be to establish the assurance of a sufficient supply of gasoline along the route of the race to preclude the possibility of extortion on the part of dealers, which has frequently been the experience along the line of many races and tours.

#### RULING IN TIRE CASE

Akron, O., March 19—The supreme court of the United States has denied the certiorari petition of the Consolidated Rubber Tire Co. in the suit against the Goodyear Tire and Rubber Co., the decision being handed down March 8. As Secretary George M. Stadelman of the Goodyear company views it, this leaves the Goodyear company free to sell solid rubber carriage tires in any portion of the United States or its territories without itself or its customers being annoyed or molested by a suit for infringement. Through a peculiar construction of the law, Secretary Stadelman says, the outcome of the Goodyear case in nowise effects other tire manufacturers or their customers, who are still assailable by the Consolidated company. He says: "The Consolidated Rubber Tire Co. began suit against the Goodyear Tire and Rubber Co. for infringement of its Grant patent on solid rubber tires in the spring of 1899 in the United States circuit court at Cleveland, O. In October, 1901, Judge Wing rendered a decision adverse to the Goodyear company. This case was appealed to the United States circuit court of appeals, the Goodyear company furnishing a bond of \$100,000. On May 7, 1902, the court, consisting of Judges Day, Lurton and Severence, rendered a decision reversing the lower court and finding in favor of the Goodyear Tire and Rubber Co. The Consolidated company then made application for a hearing to the supreme court of the United States, its petition being denied. About 2 years ago, the Consolidated company obtained a favorable decision against another rubber tire manufacturer in the New York district, which resulted in conflicting decisions in courts of equal jurisdiction. Taking advantage of this situation, the Consolidated company again endeavored to have the Goodyear case reviewed by the supreme court, and for a second time its petition has been denied by the highest court of the land."

## RECORD RUN IS NOW ON

### Maxwell Covers 2255 Miles Up to Tuesday in Its 10,000-Mile Non-Motor Stop Test

Boston, Mass., March 23—Special telegram—The Maxwell 30-horsepower car that is striving to make a 10,000-mile non-motor stop run is still on the job. At 3 o'clock this afternoon it had completed twenty-six trips, which represented 2,255 miles. Great interest is being manifested in the attempt of the Maxwell.

Boston, Mass., March 24—For nearly a week now a 30-horsepower Maxwell car has been rolling back and forth between this city and Worcester to complete a non-motor stop run of 10,000 miles. The car was started off on its journey last Thursday morning at 10 o'clock from in front of the Bay State A. A., when President Lewis R. Speare of the A. A. A. cranked the car. At the wheel was Lucius Tyler, of the local Maxwell branch. He was accompanied on his first trip by Charles Goldthwaite and Adam Schneider. The men who are to handle the car during the run comprise Lucius Tyler, Ralph Coburn, W. S. Simonds, Charles Goldthwaite, Arthur See and Ellery Wright, drivers, and Adam Schneider, Joseph George and C. F. Lawrence, observers.

Before starting off on the trip all the men were lined up in the Bay State A. A. rooms and A. B. Teel, a Boston attorney, made them take an oath to report truthfully everything that happened. The car was then sent on its way. It is figured out that the run will take at least 25 days to complete the 10,000 miles. The first week the car is to run back and forth between Boston and Worcester. Next week the route will be shifted so Providence will be the objective point. The final week it will go to Newburyport and back.

The Maxwell people endeavored to have some of the other Boston dealers enter cars in the run and C. W. Kelsey, who has

been here from the factory since the show, waited to see if anything could be done along that line. Some of the other Boston men were anxious to enter but they found it impossible to get cars and men from the factories. The drivers and observers work in relays, each man doing 8 hours in the car and resting 16.

Arrangements have been made with the motor clubs at Worcester, Providence and Newburyport so that the car shall be checked in and out when it reaches those places. The car is using Ajax tires and Warner and Stewart speedometers.

#### DEATH OF HENRY TIMKEN

Canton, O., March 20—Henry Timken, president of the Timken Roller Bearing Axle Co., died at San Diego, Cal., last Tuesday, the announcement of his demise coming as a surprise and shock to the company, for despite his 76 years Mr. Timken was unusually sturdy and rugged. The funeral will take place in San Diego tomorrow and today the Timken plant here was closed in tribute to the memory of the founder. For 12 years Mr. Timken had lived in San Diego, where he had taken up his residence after his retirement from the business in which he had served 45 years. He was a pioneer in the manufacture of carriage, wagon and motor car roller bearings. His first patent was the Timken spring and he followed this up with the Timken tapered roller bearing.

#### OLD RAINIER PLANT BUSY

Saginaw, Mich., March 22—The reorganized Marquette Motor Co., successor to the Rainier Automobile Co., has started up the local factory after an idleness which has lasted since last fall. The company is under control of the Buick interests at Flint. It is incorporated with a capital of \$300,000. The officers are: President, W. C. Durant, of Flint; vice-president, A. T. Ferrell, Saginaw; secretary-treasurer, A. H. Goss, Flint; directors, A. H. Goss, W. C. Durant, A. T. Ferrell.



MAXWELL THAT IS STRIVING TO MAKE 10,000-MILE NON-MOTOR STOP RUN

# NEBRASKA ASKS FOR GLIDDEN RECOGNITION



TYPICAL NEBRASKA SCENE ALONG PROPOSED GLIDDEN ROUTE, JUST OUTSIDE OMAHA

OMAHA, NEB., March 21—Confident in the belief that when the decision of Chairman Frank B. Hower of the contest board of the American Automobile Association, under whose auspices the Glidden tour will be run this summer, is made public it will include Omaha as one of the cities of the middle west through which it will pass, Omaha car owners and others generally interested are already informally discussing plans for entertaining and caring for the participants and their followers.

The foregoing statement, however, must not be taken to indicate that this belief is held by all of the members of the Omaha Automobile Club, for there are quite a few of them who are less confident and are in favor of continuing the active campaign, started some time ago, until the decision of the board has actually been reached. This reasoning of the minority is believed by the majority to be sound logic, and they realize that it would be a grave mistake to lose the ground already gained by previous activity. Following this belief, the Omaha Automobile Club as a whole is earnestly at work to make it an assured fact.

## Boom Started at Chicago

While many individual members have interested themselves in the matter for a long time, the first organized effort was put forth at the Chicago show, when the Omaha delegation, nearly fifty strong, boosted for Omaha and the west. Naturally enough, the Chicago show being almost entirely a western exhibit, and visited by western dealers and manufacturers, this delegation found much support and sympathy from other nearby cities, and as a result the entire central west worked in perfect harmony,—in the belief that by securing the tour for this part of the country there would be little doubt of their

respective cities being included in the list of the chosen few.

With the exception of the individual letters sent to Chairman Hower by Omaha dealers, the movement inaugurated a few days ago by the club perhaps is one of the best concentrated actions looking to the desired end. Upon request of the club practically every dealer in the city wrote to the manufacturers of the cars represented here urging them to use their influence. As there are no fewer than seventy-five factories represented here, it is believed that these requests will be productive of much good, and so confident are the Omaha enthusiasts that they are right now "resting on their oars" waiting for the final word from Mr. Hower.

## Nebraska's Claims

Much has been said and written about Nebraska's claim for recognition as a likely candidate for America's motoring classic. It has even been said that its roads are poor; that its hotel accommodations are inadequate; that there is little or no interest in the tour, and that it is not a good territory for selling motor cars.

With possibly one exception these statements are wide of the mark. It may be true that in some parts of the state the hotels would be overtaxed in caring for such a large contingent as that making up the Glidden tourists, but this fact can hardly be considered detrimental to the state, as it has practically been decided to use Pullman sleepers and dining cars west of here. This feature of the tour has proved to be popular, and rather than a hindrance it is believed by many will prove a valuable asset to Omaha's claim for recognition.

As to the other contentions of the critics, they are absolutely without foundation. Everyone who has passed over the Nebraska roads in the summer months

knows that there are none better to be found. The peculiar mixture of clay and sand makes a smooth, hard road that is not far behind a macadamized highway, and with towns and villages widely separated, no speed laws to hold them back, and practically a clear track, Nebraska offers great inducements.

Again is the critic mistaken when he declares that it is not a good territory for selling cars. According to the statistics in the office of the secretary of state there are today approximately 6,000 licensed cars in Nebraska. Judging from the fact that but 1 year ago there were hardly half that number, it will be seen that Nebraska is a coming market for motor cars. Nebraska farmers for the past several years having been harvesting bumper crops; their cribs are bulging with last year's yield of corn and wheat waiting leisurely for more favorable markets. When farmers hold their products for higher prices there is only one conclusion to be reached, and that is that they have money.

Experience has taught Omaha dealers that the farmer is a buyer of motor cars. This fact is also demonstrated by a glance at the records of the secretary of state, which show that in the two largest cities of the state—Omaha and Lincoln—there are but 1,000 cars, as compared with the 6,000 scattered through the state.

## In the Backwoods

There are certain sections of Nebraska where the whistle of the engine and the rumble of the cars has not yet been heard, and it is to these localities that the eyes of the dealers are turned right now. With no means of locomotion except the clumsy wagon, with plenty of money in the banks, and a natural desire to procure a means of transportation both for pleasure and commercial use, the farmer of the North Platte district especially is the man who



is receiving the motor car literature these days. This frequent use of the mails is not without its reward, either. Especially is this true since the Omaha show, when of the 20,000 people who passed through the doors of the Auditorium one-half of them were believed to be prospective customers from the sand hills of Nebraska. The elaborate display of motor cars and accessories was truly an educational feast for them. Many of the visitors were present at a motor car show for the first time, and while most of them did not buy outright, there is little doubt that they went away with their minds firmly made up to purchase just as soon as the season opened up.

This article is based on facts and figures, and it shows conclusively that Nebraska is a future market and that there need be no uneasiness on the part of the critics that Nebraska is a barren waste and unprofitable as a market center.

#### Market a Good One

One conservative Omaha dealer expressed the opinion a few days ago that 4,000 cars and upwards would be sold in Nebraska this year. Where his information came from, or on what grounds he based his belief, is not known, but his views are held by other men who have traveled over the state quite extensively, and some of them even place the number at 6,000.

But to return to the Glidden tour. Omaha's heart is set on being on the circuit, and if the combined efforts of approximately 300 club members count for anything it is bound to see its desire gratified. With a population of 220,000 within a radius of 8 square miles, in which are located Omaha, South Omaha and Council Bluffs, with a total number of motor cars estimated at 800, and 300 club members, this locality is in a position to bid for favor. Not only are these three cities interested in the tour, but the towns along the Platte river are working for the same object. Outside of the claims mentioned above these towns are basing their contention for recognition on the strength of a feature that heretofore has not figured in motor car tours.

Not the least interesting portion of the route will lead along the line of the Union Pacific railroad in Nebraska, which road follows the old Oregon trail with all its memories of romance and tragedy making it the most picturesque and remarkable highway in the country if not in the world. For every tie in the entire line of the railroad to Cheyenne, a distance of 550 miles, a life was sacrificed during the years in which thousands of argonauts swarmed along the only known route overland to the California El Dorado.

#### The Long Expedition

First of all there blazed the road the scientific expedition under command of Major John S. Long, of the United States topographical engineers, whose mission

### STATISTICS SHOWING IMPORTANCE OF STATE OF NEBRASKA

City	Population		Cars Owned	Distance From Omaha
	City	County		
Omaha	150,000	200,000	600	.....
South Omaha	40,000	200,000	100	4 miles west
Council Bluffs	30,000	55,000	100	3 miles east
Fremont	8,000	23,000	75	47 miles n.w
Schuyler	2,200	12,000	30	76 miles n.w
Columbus	4,000	18,000	40	92 miles west
Central City	1,600	10,000	30	132 miles west
Grand Island	8,000	18,000	60	154 miles west
Lincoln	50,000	65,000	450	55 miles s.w
Seward	2,000	16,000	35	105 miles west
York	6,000	19,000	75	130 miles west
Aurora	2,000	13,330	60	154 miles west
Kearney	6,000	21,000	75	195 miles west
Cozad	1,000	12,214	25	220 miles west
North Platte	4,000	12,000	30	291 miles west
Ogallala	400	3,000	15	306 miles west

was to explore the country as far as the Rocky mountains. Major Long, with five scientists and a landscape painter, attended by seven soldiers of the line, started from Engineer Cantonment, south of the present city of Fort Calhoun, Washington county, and traveled along the Platte to its forks, taking the south fork and discovering the Colorado peak which now bears his name. Warned by the Indians along the first half of the journey of the good chances of starving to death, the little party practically burned the bridges behind it and plunged into the wilderness. That was in the spring of 1820. Today the unknown country is a veritable garden filled with great fields of grain and thousands of fattening cattle, horses and sheep.

#### Of Historic Interest

Many years after the Long expedition came the goldseekers en route to California and then the thousands of Mormons traversed the route. The Platte river was hugged closely because of its never-failing water supply. To have left the river meant death through thirst, so all followed the old trail. The plains Indians did not take kindly to this invasion of their domain and thousands of emigrants lost their lives through the attacks of the original landholders. It finally got so only large parties were safe from the Indian raids, and sometimes the long trains were es-

corted by troops. The trail itself led over unfenced lands, and sometimes it widened out to a quarter of a mile, and years after the transcontinental railroads stopped travel by wagon over the trail. Sunflowers grew so thick where the road had been that standing on an eminence one could see a wide band of yellow stretching away miles in the distance when the plants were in bloom.

Then in 1867 the Union Pacific was finished to Cheyenne and the overland wagon route was abandoned. While it was the one route to the Rockies it was traversed both ways, and freighters with slow-going oxen, eight or ten yoke to a wagon or two, grew rich transporting merchandise from Omaha to the mining camps of the west, and Francis Parkman immortalized the old route in his classic, "The Old Oregon Trail."

While of course there have been many changes in this old trail, there unmistakably remains still that romance and tragedy that is sure to prove attractive to the traveler, whether in motor car or ordinary horse-drawn vehicle.

For a distance of 25 miles both on the north and south this wonderful valley has been built up, until now there is no richer country in any state in the union. Its inhabitants who till the soil have become in many cases rich and influential, and not a



STEVENS-DURYEA MAKING 2 MILES IN 1:43.2-5 OVER ORDINARY NEBRASKA ROADS

few of them own motor cars. The accompanying figures are based on statistics furnished from a reliable source and are conservative to say the least:

#### Denver Investigating Route

Denver, Col., March 20—The Denver Motor Club has been securing information regarding routes for the Glidden tour west of Omaha, and the most feasible so far is along the Burlington railroad. The distance by the highway is a little less than 600 miles, and the roads are such that they could easily be covered in 4 days. The first day out from Omaha the noon stop would be at Lincoln, 55 miles. Here the hotel accommodations are ample, and as the roads are excellent, the tourists would have time for a side trip to Bryan's home at Fairview. From Lincoln to Hastings by way of Milford is about 100 miles and the roads are good, there being no hills, as there are on the direct route. Hastings has good hotel accommodations and will make an excellent night stop.

The second day would bring the tourists to Holdrege, 55 miles, for the noon stop, and to McCook, 80 miles farther, for the night stop. The roads for this day's journey are reported good. The hotels at McCook can furnish 120 beds, and there are a number of private houses that will supply more if necessary. The third day the run is to Holyoke, 90 miles, for the noon stop, and 50 miles additional for the night stop at Sterling. On the fourth day the run is through Brush to Fort Morgan, 44 miles, where the noon stop will be made. From Fort Morgan to Denver is 78 miles, over fine roads which can be covered in 3 to 4 hours. The tourists would reach Denver about 4 o'clock in the afternoon. If the roads from McCook to Fort Morgan are in good condition the third day's run could be made to Fort Morgan instead of Sterling. This would make the day's jour-



GOOD GOING IN NEW ZEALAND

ney 185 miles, a trip which the motorists of Fort Morgan say is practicable. This night stop would be better, as the tourists could then reach Denver before noon the following day.

#### Hower Visits Detroit

Detroit, Mich., March 22—F. B. Hower cast anchor at this port—for Hower is a yachtsman bold as well as a motorist—and jollied the motorists Saturday and Sunday. In addition he met Mayor Breitmeyer and things are mighty serene here as regards the Glidden tour. Mr. Hower says this will be the most strenuous run the Gliddenites ever have tackled—2,300 miles in 13 days—and it will be an endurance and reliability test that is such from every angle. He will announce the route and the date of starting on April 1, but at present it looks as if the cars would leave here on July 7. The cars will be parked in Cadillac square, which is right down town, adjoining the Pontchartrain hotel.

## Demonstrating Tour New Idea in Colorado

Denver, Colo., March 20—A dealers' demonstrating tour is the next event to be given under the management of the Denver Motor Club. This promises to be unique, and it has met with favor among the dealers who have been approached on the subject. The idea originated with Charles P. Allen, treasurer of the club, and he has offered a trophy valued at \$500. It is proposed that the tour be held this year from Denver to Pueblo, a distance of 116 miles. The contestants will be dealers only, and the tour will cover a period of 3 days, beginning Friday, April 23. On the first day the entrants will drive with full passenger load from Denver to Pueblo, each car carrying an observer who will carefully note any violations of the rules. When Pueblo is reached the entrants will be permitted to make any repairs they wish, or do anything they like with their cars. On the following day the public will be invited and demonstrations of the cars will be given to anyone interested. This day will be practically a show day, and the Pueblans and visitors from the surrounding towns will be given an opportunity to view and try out the various makes of cars entered. After this day of demonstration the cars will again be sealed by the committee in charge, new observers appointed and the run made back to Denver on Sunday under the same regulations in force on the downward journey. A final inspection of the cars will be made at the end of the trip and the prizes awarded to the cars receiving the least penalization. Entrants may decorate their cars in any manner they wish, and advertising stunts will be encouraged rather than discouraged. It is the aim to make this a moving show which will stimulate the interest of the people in the country through which the caravan passes. This contest will be an annual affair, and next year it is proposed to make the run either to Salt Lake City or to Yellowstone Park.

#### BUILDING MILE MOTOR TRACK

Detroit, Mich., March 22—Albert H. Moone, secretary of the Providence, R. I., track, is here and says that as soon as the weather permits work will start in transforming the Narragansett park oval into a model mile motor track. The banks will be 20 feet high, the turns of cement and the stretches of oil-sprinkled clay. The inside fences are about 100 feet from the bottom of the turns, so liability of accidents is minimized. Mr. Moone bought 7,500 barrels of cement with the understanding that he can make it 10,000 if needed. He thinks a meeting can be held there by Labor Day. The Michigan state fair will announce a 1-day program for motor cycles on September 2, and 1 day for touring and stock cars on September 3.



NEW ZEALAND SCENES, SHOWING MOTORING CONDITIONS



## New Formula Is Used In New Zealand Test

London, March 12—According to information just received, ten American cars participated in a 547-mile 4-day reliability trial in New Zealand the latter part of December, which was run by the Canterbury Automobile Association and in which three Talbots finished one, two, three. The Talbot team consisted of four cars, one of them a 12-16 horsepower; two of them 15 and the fourth 25. The American contestants included six Reos, three Cadillacs and a Buick, but details of their performances are lacking. Thirty-seven cars competed. The test is said to have been a particularly severe one, in which these motor cars participated. As described by one correspondent, "the roads were especially picked for their severity. Rivers had to be crossed, steep hills climbed, and, to make the trial extra severe on the last day, the engines were raced up 5 miles of very steep hill; then came a trip of another 50 miles to Christchurch, crossing the tortuous and terribly steep Dyer's pass, some of the gradients of which are 1 in 5." The test was an out and home affair, with Christchurch the hub of the wheel and the longest day's journey 166 miles. The interesting part of the affair, though, was that the suggested new formula of the Society of Motor Manufacturers was used, the awards being made on the following basis: 800 marks for reliability; 100 marks to be allotted to the car making the best performance in the hill-climbing test, the other cars being allotted a percentage according to their relative performances determined by the formula,

H.P.  $\times$  T

W

H. P. =  $.147d^2 N \times (r + 2)$  where  $d$  = bore,  $N$  = number of cylinders and  $r$  = ratio of stroke to bore; 100 marks to be allotted to the car showing the lowest fuel consumption per ton mile on the second day—149 miles—the others being allotted a percentage equivalent to their performance. It was practically a non-motor stop run, marks being lost for any stops other than compulsory or tire stops. All cars competed in one class, but allowances were made in the time and speed averages for different powered cars, the classes being over 22 horsepower, over 10 and below 22, and 10 horsepower and under. Accidental detours and tire troubles were not penalized.

### BIG FIRE IN CLEVELAND

Cleveland, O., March 22—The most disastrous fire in the history of the retail trade in this city was visited upon the garage, salesroom and repair shops of Harry S. Moore, 1761 Crawford road, early last Friday morning. Before the fire department had checked the flames over



THROUGH NEW ZEALAND FOREST

\$75,000 worth of cars had gone up in smoke. These embraced the Stoddard-Dayton and Brush machines, belonging to the agency, numerous second hand machines and a large number of boarders, over twenty-five cars being badly damaged if not ruined. Moore was well covered with insurance. Practically the entire rear of the building was destroyed, but the front show rooms were saved, the new cars in them being almost unharmed. Moore is planning to rebuild on a still larger scale. One of the interesting side lights on the fire was shown in the way the local trade rallied to Moore's support. Before the engines had ceased throwing water he had many offers of assistance.

### BALTIMORE PLANS A RUN

Baltimore, Md., March 21—Members of the Automobile Club of Maryland are turning their plans now to the idea of

holding a tour or contest some time in May. Just now an efficiency run seems to be in the greatest demand and Secretary Darling has made a tentative plan for what he thinks will be an interesting contest. According to the secretary's plan, the course would begin in this city, extend to Ridgeville and thence to Frederick, a distance of 48 miles, over fair roads at best. The cars would pass through Lewis town, Catocin, Thurmont, Emmitsburg and Gettysburg, a distance of 33 miles from Frederick. To Emmitsburg the road is good, but from there to Gettysburg participants in such a contest would find some decidedly rough traveling. The return to Baltimore would be through Littlestown, Westminster and by way of the Valley road, a distance of about 35 miles. In all the machines would travel about 115 miles, and the time allowed would probably be between 7 and 8 hours. At Eccleston Station there is a decidedly steep hill, and Darling's plan calls for records being made of the time required to negotiate this mile and a half stretch. The rules would call for sealing all the hoods.

### FERNAUD RENAULT DEAD

Chicago, March 23—Cable advices from Paris announce the death of Fernaud Renault, of the firm of Renault Freres, makers of the Renault car. The cause of his death was not stated. Fernaud Renault was born in Paris, November 28, 1864, and in addition to his connection with the Renault concern he was vice-president of the Automobile Section of the Syndical Chamber of the Automobile Club of France. He is survived by his brother Louis, who is a member of the sporting committee of the A. C. F. Marcel Renault, one of the founders of the Renault company, died as the result of an accident in the Paris-Madrid race.



HEADWATERS OF THE WAUGANCEI RIVER, THE RHINE OF NEW ZEALAND

# Washington to Baltimore

**P**HILADELPHIA, March 22— Since the 1908 New York-Paris race, when the contesting cars fought their way through deep snow drifts from Toledo to Chicago, the motoring public has become accustomed to motor cars doing almost everything demanded of them, but the feat of Jim Florida, who drove a Locomobile shaft-drive four-passenger roadster from Washington to Baltimore after the Taft inauguration has again opened the eyes of the people to the wonders of the modern motor car. Florida, who drove a Locomobile into second place in the Vanderbilt cup race, was the first to get through from Washington to Baltimore after the terrific snow storm which raged at the time the new administration took hold. His car, a model L 30-horsepower machine, was the only one to ride out the blizzard.

When Florida left Washington at 10 o'clock on the Sunday morning following the inaugural it was clear and warm and the roads good for 3 miles outside the capital. Still, Florida was prepared for most anything in order to buck the snow and travel through rough fields. He carried three sets of Weed chains and axes and



TRAIL THROUGH THE FIELD

shovels. They were brought into use when the party turned into a side road going to Ashton, 15 miles away. From this point on it was a fight with the snow, which was waist-deep. After opening a way for 2 miles and with the snow up to their shoulders, the Floridans essayed to swing into a ploughed field, between which and the road was a ditch 2 feet wide, which they attempted to jump. The rear wheels

went into it to the hubs and the motor was stopped by the flywheel coming into contact with the ground. The car was in such a position that the motor could not be cranked, so a road was built with fence rails and the car started across the field on low gear only to fall into a deep hole where the mud came up to the running boards. Again the engine was killed by the flywheel digging into the ground and then came more road building. To get the rails,

however, it was necessary to wade through snow and mud knee-deep for at least 400 yards, so getting twenty rails meant a lot of work.

The sun converted the field into a sea of mud and in 3 hours the motorists had advanced only two lengths and the car was gradually sinking in the mud. Then it was decided to get back on the road and twenty telegraph linemen who were at work near there were called upon, the combined forces succeeding in turning the car around and heading it for the road. Again the ditch had to be jumped, but as it was down hill the car made the leap nicely, although the flywheel again contacted with the ground, stopping the motor. Once



SCENES INCIDENT TO LOCOMOBILE'S BLIZZARD RUN FROM WASHINGTON TO BALTIMORE



# Conquering

# Winter's Snow

across, it was another battle with the snow and it was a case of dig for  $1\frac{1}{2}$  miles. Then it was either shovel as far as the eye could see or else dig for 50 yards and again try a field, which proved better going than had the other one.

For a way the road was fairly good, but soon the Locomobile again ran into snow and here it was that the effects of the storm were most noticeable. After going about a mile, they struck one of the most miserable and roughest roads that one can imagine. Along here telegraph poles had fallen and become partly hidden in the snow; the fly-wheel would strike these poles with such force that at one time it was thought the engine had been torn loose from the frame. Some places they could see the fallen poles across their path, but with the use of axes they would soon chop them enough to get through. Along this road the rear wheels kept picking up telegraph wires, which would wind around the rear axle and brake drums and then pull up the car with a jerk as though it were lassoed. These wires would be fast to a fallen pole. Sometimes the car would be going fast enough that it would snap



SHOVEL BRIGADE AT WORK

them off and then they would beat against the mud guard and Florida would be compelled to stop and cut them away.

"It was now 4 p. m., and we had gone only 19 miles since 10 o'clock," says Florida in describing the trip. "After getting over this 6 miles of miserable road that was strewn with telegraph poles and wires, we sighted another barrier of snow only waist deep, but just as far as we could

look we could see this beautiful snow, packed so tight that we could walk on top of it without making an impression. To shovel this meant some grand exercise, and to get into the field that was 5 feet up from the road meant some more exercise. After eating a couple of fine delicious white snowballs, we decided to take the field, so down came the fence and we hunted for some fence rails and we built a log road into the field, removing a telegraph pole that seemed in our way. The incline up the field was like going up a pair of steps. With a rush the little car made a desperate effort, but failed, as the rear wheels picked up the rails and threw them back as though they were so much dirt. So we backed down to pick out a better road. This time a rush was made, but nothing done, as the front wheels sunk at the top of the embankment and the rear wheels flew around and fairly sawed the fence rails through where the wheels struck them. We made six more attempts and failed, as the ground became so soft that the fence rails sank out of sight, so we tried to find another entrance and did. From there on it wasn't so bad."



ADVENTURES IN THE SNOW OF FLORIDA AND HIS WASHINGTON-BALTIMORE PARTY



# Legal Lights and Side Lights



## BAY STATE IS AROUSED

THE proposed new motor law that was drafted by the Massachusetts highway commission and presented to the present session of the legislature got its baptism of verbal fire last week and when the ordeal was over it was pretty well singed. It was discussed for 2 hours on Wednesday morning and for the same length of time in the afternoon. On Friday morning it got the final touches. For the first time in the history of legislation in the Bay state the motorists put up a strong, united front, and while in minor details they disagreed, on the main propositions they were all together. The hearing was handled admirably and the results should be beneficial to the motorists. The feature of the hearing was the manner in which Charles Thaddeus Terry presented the side of the motorists. When the members of the committee threw questions at him he turned them around neatly to the disadvantage of the questioner.

Of course the real bone of contention was the proposition to tax cars according to horsepower, ranging the fees from \$5 to \$30. But there were so many other faults in the bill that every speaker had something new to say against it, and then all the ammunition was not fired in the first hearing.

It was brought out that the motorists are not opposed to paying something toward the maintenance of the roads, but they do object to being soaked, as the proposed law contains a lot of little side issues that call for fees besides the tax which goes up as high as \$30. One way that seemed a good suggestion to get money was the proposal that 20 per cent of the taxes assessed upon motor cars as personal property by cities and towns be diverted to the state. When the hearing began nearly all the members of the committee on roads and bridges were on hand. Senator Hibbard presided and A. D. Converse, of the state association, handled the campaign for the motorists. The first speaker was William A. Thibodeau representing the Automobile Legal Association. He began by stating that he objected to the law on two grounds. It was unconstitutional to tax cars to raise revenue, he declared, and it was also unjust discrimination. He declared that the Safe Roads Association was going out of business and that when it found it could not employ its attorney any longer it secured for him the place of district attorney. "And this district attorney has made the statement in the presence of my partner that motorists should be soaked," said Mr. Thibodeau. As an instance of unjust discrimination he cited the case of a man who was fined \$10 in

the lower court and who undertook to appeal and later decided to settle and found that he had to pay \$20 on the order of the prosecuting officer. Then he paid his respects to Police Commissioner O'Meara of Boston, who he said openly boasted that his department had collected more than \$19,000 from motorists during 1908. Motorists have been hounded and persecuted in the state, he charged, for merely technical violations of the law because officious officers regarded motorists as their legitimate prey.

These were the things that were beginning to hurt, declared Mr. Thibodeau. Asked by one of the members of the committee to cite instances of technical violations, he gave some, such as forgetting to carry a license; failure to have a lamp lit; numbers muddled; and he also told how traps were maintained for but 100 feet and men going through one in 5 seconds when the time should be 6 were gathered in. The framers of the bill would have the motorists carry around evidence against themselves, he continued. He stated that the highway commission was composed of three of the most fair-minded men it would be possible to find anywhere and no one could find any fault with their decisions. Then he called attention to the fact that the penalty section increases the fines. The uniformity should be based on lights, plates, registration and speed, he said. As to the taxation, he referred to the case in Rhode Island where bills have been introduced seeking to cut down the present taxes now in vogue there. He suggested that an easy way to secure the money needed for the highways would be to stop construction for 1 year and devote the money appropriated for that purpose to repairs. Or a bill could be passed taking 20 per cent of the money received by cities and towns for the personal property tax on motor cars and turn it over to the state and there would be no occasion for the bill as presented. The speaker then gave the committee some facts and figures over which to ponder as representative of the industry in this state. They were as follows:

About 20,000 cars.....	\$40,000,000
8,000 drivers earning about \$800 yearly .....	6,400,000
10,000 other employees at \$800 yearly .....	8,000,000
Value of accessories.....	5,000,000
Factories, machinery, real estate, etc. ....	20,000,000
Taxes .....	1,800,000
Total .....	\$81,200,000

Charles Thaddeus Terry stated that he represented the National Association of Automobile Manufacturers and also the A. A. A. He said that every state is interested in the bill because of the efforts toward uniformity that are under way

now. The road hog and bad motorists, he stated, comprised but 5 per cent of the motorists, and so the other 95 per cent was entitled to consideration.

"You cannot enforce a law behind which there is no popular sentiment," he said. "And there is no sentiment behind this bill. The provision that allows a license to be suspended without a hearing gives too much authority. It is against the constitution of the United States, for it deprives a man of the use of his property without due process of law." Colonel Sohler, of the highway commission, stated that a car could be registered in the name of some other member of a man's family. It was also stated that it would cost \$5 to do this and that the attorney-general had given an opinion that this reregistration is compulsory. Mr. Terry said that that was clear proof of the unconstitutionality of the law. He said that a team of horses or a trolley car that figured in an accident were not put out of use, so a motor car should not be either.

Mr. Terry pointed out that the proposed bill seemed to give the highway commission unlimited power and that it would be confusing to try to keep track of all regulations. The ideal law must be simple enough to protect the users of the highway and have the motorist understand it. He stated that the language of section 8 gave the commission power to discriminate against cars of any make if they did not like its design. "The question is not, will they do it? but whether the legislature wants to give them such power," he said.

Terry stated the bill as proposed would drive half the cars off the highway and it would stop the manufacture of cars to some extent in this state. He stated that motor cars are no longer a luxury and that the men of meager means are buying the cars now, and these men count the cost before purchasing.

"No tax on motor cars is legitimate," he said. "You cannot select any class of users of the highways and tax them. If you are going to make a fair law, one that is constitutional, all users of the highways may be taxed, but no special class." He then stated that the roads at present were not built for motor cars or modern conditions of travel. If they were the motorists would not wear them out. So roads must be built to keep pace with conditions and the money must come from the general tax levy. No one made any outcry when roads were built for horse-drawn vehicles, he said, to take the place of ones used by the ox-cart.

Motorists feel the tax would be a contribution, and while they are willing to



help the states, they object to the principle that they should be singled out above others and made pay more, he added. If they can get fairness along other lines they will willingly help here as they have done elsewhere, but above all the principle of the thing should be asserted at all times. He urged the members of the committee to get the motorists back of them and then they could frame a reasonable law and one that would be obeyed.

Asked about the tax proposition, he stated that any tax is discriminatory, but motorists did not object to a fair one. Asked what he considered a fair one, he said the Connecticut or New Jersey one seemed to be nearer than the present proposed bill. In those states the tax is divided, the lowest being \$3, the next \$5 and the highest \$10.

President Lewis R. Speare, of the A. A. A. opened the afternoon session. He stated that the present bill did not represent the sentiment expressed at the conference of New England governors. Had the motorists been consulted there would be less opposition and a better bill. The sentiment there was unanimous for uniform motor laws and yet the proposed bill had been turned down already by some of the New England states. He went into some details relative to the horsepower plan and stated that it was not a fair basis when a car like the Lancia, rated at but 12 horsepower, could travel as fast as some American cars rated at 60 horsepower, and therefore, it being admitted that it was speed that tore the roads, the Lancia would only pay one-third or one-fifth as much as another car, though doing as much damage. Then he showed the committee how one clause would class as chauffeurs every manufacturer of motor cars, maker of lamps, tops and other accessories, and even Mr. Speare himself because he is affiliated with the industry. He stated that it was not fair to tie up a man's property for something that happened if the owner were not present at the time and knew nothing of it. Yet one of the sections gave the commission the right to suspend a registration for 30 days. Now they cannot do it. He concluded by stating that the present law was good enough.

Francis Hurtubis, Jr., representing the Automobile Owners' Association, cited reports from the files of the highway commissioners that showed that roads were badly damaged long before motor cars were in use and that even so short a time as a year or so ago, when there were but 15,000 cars in use here, the cost per mile for maintenance was but \$151, while a dozen years ago, when no cars were in use, it had run up to \$146 per mile. This showed that much of the blame for damage as placed on motor cars seemed to be not borne out by facts. He said the intent that seemed to be running all through the bill was to get money on the side. He stated that there were 140,000 horses in this state and that no doubt they did some

damage to the highway, but this was overlooked.

The provision to shut off the motor power every time a car came to a standstill, he stated, was not necessary. He cited the taxicab service as showing how it would entail a lot of extra work on the drivers if every time they ran up to a door somewhere and stopped to take someone in or let them out they were forced to stop their motors. There is no reason for changing the penalties on the speed clause. The provision that compelled a man to have the record of his convictions written on his license is unconstitutional. He stated that 65 per cent of the members of his association felt that the fees were too high as proposed in the bill. The registration certificate should be the property of the owner and when a man registered a car he should get some rebate on what he had paid for registering his old car. The transfer of a car should not entail expense. As to the lights on the rear, 30 feet is a more reasonable distance than 60 feet for numbers to be seen at night.

When the hearing opened on Friday morning there were scores of dealers on hand and the battle was renewed. However, there was a lack of cohesion on that day and at the morning session the motorists seemed to be slipping backward because of the lack of unity of purpose. When questions were asked some of the speakers they did not answer them readily and some who went prepared to be registered as opposed to the sliding scale fee were swung around in favor of that proposition. J. Frank James, of the Lawrence Club, for instance, stated that motor cars did not affect the properly made highways 10 per cent, and then he said he favored a sliding scale of from \$5 to \$20. This would net the state money enough to pay for 50 per cent of the entire damage done to the roads through weather and all other conditions. President J. H. MacAlman of the Boston dealers' association stated that he did not think a 60-horsepower car did any more damage to the highways if run properly. He said the present law was good enough and he objected to the definition of chauffeur. John P. Coghlin, of the Worcester club, then went on record as in favor of a graduated tax, though not such a large one as had been proposed. J. O. Heinze proposed that the damage be computed and divided by the number of cars, assessing all a flat fee. Senator George F. Birch happened in to the hearing, and he started off comparing the tax with the liquor fee, declaring it was not a tax but a license for a privilege, and he said it was fair. F. H. Deering spoke against the bill and George M. Sargent, of the Safe Roads Association, introduced some perfecting amendments. Then there was a recess. Many of the dealers were surprised as they saw the effect produced Wednesday being nullified. The final session lasted an hour in the afternoon.

The opponents of the bill luckily made a better finish than was anticipated, although no concerted plan had been arranged. Manager C. I. Campbell of the Boston show was the first speaker in the afternoon, and he attacked the bill from the point of view that the extra cost of running the highway motor department under the bill would wipe out the proposed profits. He was opposed to any sliding fee. Representative Herbert W. Burr then attacked it from the point of view of the man who could afford to buy a second-hand car, and he said it would be killing the goose that laid the golden egg. James T. Sullivan then opened on another line, showing that there would be a corps of clerks in the highway commission office guessing at the rating of cars and assessing them on that plan. He pointed out that there was no appeal from the decision, and this was on a par with garroting men and relieving them of their money in case he had a car that rated below the figures the guessers named. He pointed out that inimical laws would raise a barrier around the state that would lead to boycotting of goods made there, and in that way, while ostensibly hitting at the men driving the high-powered cars, the lawmakers would be hitting the industry instead. That meant throwing the industry into politics, and he stated that while any legislation would not bury the industry, it would bury the political ambitions of some of those who voted in favor of it. He went on record opposed to any raise above the present flat rate, for he said the industry had done enough without being taxed more.

James S. Fortesque then pointed out that for all the industry had done for the state the motorists were entitled to something, and stated where there had been immense increases in all sorts of taxable property as a result of the motor cars. William A. Thibodeau then went on record representing his association of 1,500 members as opposed to any sliding fee. A. D. Converse, of the Massachusetts state association, then stated that his association, representing all the clubs in the state, was opposed to a sliding scale or any increased tax. The hearing ended then, the force and power of the opponents having been pulled out of the fire, as it were.

#### TOPEKA UP IN ARMS

Motorists in Topeka, Kan., are up in arms against what they claim is an unjust prosecution on the part of Police Judge S. S. Urmy, who has been assessing fines of \$25 on every case of violation of the speed ordinance brought before him. The limit of endurance, however, was reached last week, and as a climax a meeting of all the owners and chauffeurs was called, which was attended by about forty owners of cars at the Topeka Commercial Club and ways and means of seeking some form of relief was thoroughly gone over. A new ordinance in a tentative form was pre-



sented and discussed. It provides for a speed of 12 miles an hour on Kansas avenue, the principal thoroughfare, and 20 miles an hour on residence streets, with an 8-mile rate turning corners. Under the present ordinance motor cars are permitted to run at the rate of 8 miles an hour on Kansas avenue, or 16 miles an hour on residence streets. The present system of fines, which permits of a maximum of \$100, is considered excessive and a clause in the proposed ordinance changes this to \$25; also a provision permitting physicians in answering sick calls, and one giving demonstrators of cars the privilege of running at a higher rate of speed without liability to arrest.

The matter has gone to such extremes that the question is likely to be made an issue at the polls in April, when an effort will be made to defeat Judge Urmy by the organization of an independent political party. Those interested in the matter declare that Topeka is different from many other cities in this respect. Topeka's streets are very wide and there is practically no congestion at any time during the day.

The question was taken up with the city council and mayor on the day following the meeting and those officials are of the opinion that some change that would offer a little more liberty to motorists would be a good thing. They also expressed the opinion that the fines being imposed, ranging from \$25 to \$50, are altogether too severe and they will recommend that they be modified. As an outcome of the meeting Monday night the entire councilmanic body will be taken for a ride over the city at the regulation speed limits in the hopes that they will see the absurdity of the present low speed ordinance.

#### MARYLAND IS STILL FIGHTING

The Automobile Club of Maryland, together with the owners of motor cars throughout the state, are sticking to their plans for putting up a determined fight against the passage of the proposed Swann motor vehicle bill. The scheme decided upon at the state convention of motor car owners several weeks ago to organize the motorists of the various sections of the state into councils of the club already has resulted in the formation of three of these. These councils have been formed in Hagerstown and Frederick the past week and previous to that the one in Union Bridge was organized. Dr. H. M. Rowe, president of the Automobile Club of Maryland, and Secretary Darling are the acting organizers. The chief purpose of this organization is to secure motor car legislation that will be satisfactory to both the owners of cars and the public in

general. The real bone of contention against the Swann bill is that feature which the motorists declare calls for a special tax on cars. While the motorists will fight this portion of the bill to the last ditch, the Automobile Club of Maryland will no doubt draft a bill of its own which the members believe will be satisfactory to all concerned and ask the state legislature to pass it. Within the next week or so councils will be organized at Annapolis, Belair, Havre de Grace, Cumberland, Rockville, Aberdeen, Salisbury and Easton. Each council will elect a delegate, who will be a member of the board of governors of the state organization, which will consist of the board of governors of the local clubs and the delegates from the various councils throughout the state.

#### ATTACK IS FRUSTRATED

Representative Whelan's bill to wipe out the Michigan state highway commissioner's office has come to an ignoble end. Whelan, who is from Shiawassee county, sought to eliminate the whole department from the state government. A bill was introduced providing for this, but it went to the highway and bridge committee of the house of representatives, where it was buried. Whelan secured enough votes in the house to take it from the committee, but when it came to a vote on the measure it was killed with little compunction. Another highway bill which is promised an ignoble death in the legislature is a bill to allow a resubmission of the good roads districting in Kent county. The city of Grand Rapids and five townships decided about 2 years ago to form a good roads district. In the first year \$20,000 was spent in improving the roads and in the second year several thousands of dollars less was the figure. Grand Rapids is now paying 88 per cent of the road tax and is trying to wriggle out of the district. For the purpose of allowing Grand Rapids to do so a bill has been introduced to resubmit the proposition to the voters of the district. It is generally conceded that the bill will fail of passage. The bill to provide a sliding scale of taxes for motor cars, based on the relative horsepower of machines, is now practically buried in committee. The bill was referred to a committee as soon as it was introduced and it is there yet, with the prospect that it will gather some cobwebs before it sees the light of day again.

#### NEW ATTACK CONTEMPLATED

If a movement just initiated by the state highway commission at Albany, N. Y., terminates as predicted by the former state engineer, Frederick Skene, it will be necessary for touring motorists to rip off

their tire chains when striking New York state highways. Whether or not the state, under the new highway law, should prohibit the use of chains or armored tires on motor vehicles on the highways of the state will be discussed at a hearing before the state highway commission in the common council chamber of the city hall in Albany on April 1. Former State Engineer Skene in his annual report early this year sounded a note of warning against the alleged damage which is being done to the state's improved highways by motor cars. "The traffic which produces this disastrous result must be restricted," said the report, "or new methods, however expensive, must be used in construction to meet the conditions which confront us." This was prior to the organization of the new state highway commission. Reports to the commission received since, it is said, indicate that it will cost thousands if not hundreds of thousands of dollars to put the present improved highways in good condition. The commission has the authority to make rules and regulations from time to time for the protection of state and county highways; they may prescribe the width of tires and may even prohibit the use of chains or armored tires on motor cars. The statement just issued says: "While it is the intention of the commission to take all lawful means in its power to protect the public highways, which have been improved at great cost to the state and county from unnecessary and improper damage, yet it recognizes the fact that a large number of the citizens of the state have interests which should be given careful consideration, and it is for the purpose of obtaining an expression from all points of view that this hearing is to be held by the commission before it formulates the rules and regulations."

#### LINCOLN BILL IN DANGER

Last week was a most anxious one for motorists and good roads enthusiasts who are interested in measures now going through Pennsylvania's legislative mill at Harrisburg. On Thursday last the Lincoln highway bill, as the Philadelphia-Pittsburg road measure is now called, was saved in the house by the narrowest kind of a squeak. It was up on second reading, and in the absence of some of its more prominent advocates the opposition opened up its siege artillery and soon had the good roads people hunting cover. "Farmer" Creasy held that \$5,000,000 would not come anywhere near building the road; it would, he said, total up nearer \$25,000,000, what with the heavy damages sure to be incurred and the cost of bridging the Susquehanna.

"The farmers are more in need of good roads by which they may reach the creameries, railroad stations and market towns; the highway under discussion would cost so much that it is quite evident that they could not get much-needed county road improvements in the event of the present



measure becoming a law in this state."

The doughty "farmer," seeing that he had the advocates of the bill on the defensive, woke up other opponents of the measure, and they followed him up with a veritable storm of objections and amendments, which were voted down by close votes. At this juncture Fair, of Westmoreland, saw his opportunity, and urged an amendment reducing the width of the road from 60 to 30 feet. It failed to pass, however. Then the opponents of the bill thought they saw a chance to kill it then and there, and there were loud calls for a roll-call. Chairman Ambler, of the roads committee, seeing that he must temporize, pleaded with the house to pass the measure on second reading, and refer it to the appropriations committee for the purpose of finding out whether the necessary \$5,000,000 could be had to carry out the work. This fine bit of diplomacy worked, and the bill was allowed to pass second reading with the understanding that it be referred to the committee in question. As it stands now, house and senate legislators are extremely apprehensive over the outcome. The governor, however, seems supremely confident.

The Grim bill has passed the senate and is yet to pass the house, where the Townsend bill has been under consideration for some weeks. The same forces that are opposing the cross-state measure are, in the main, lined up against these bills, which will probably be amalgamated, toned down, the corners rounded off and put through as a compromise, which will likely get through the senate conference committee with but little change.

#### MORE NEBRASKA BILLS

The Omaha Automobile Club is pushing a bill introduced a few days ago by Senator Ransom in the Nebraska legislature providing for the construction and maintenance of country roads throughout the state by the levying of a 1-mill tax. One of the objects of the bill is to secure ways and means of putting the roads over which the contemplated Glidden tour will pass in good shape.

The bill in full is as follows:

Section 1—It shall be the duty of the county commissioners in all counties having permanent roads and highways to provide a fund for the purpose of, and to be used exclusively for, the maintenance and construction of such permanent roads and highways outside of cities and towns in all counties of this state, and it shall be the duty of such county commissioners to expend such funds annually.

Section 2—It shall be the duty of such county commissioners when levying taxes for the county to levy a 1 mill tax which shall go into a fund to be designated and known as the permanent road fund and no part of such fund shall be used for any purpose other than the maintenance and construction of public roads and highways as provided for in this act.

Section 3—In expending the funds provided for in this act, it shall be the duty to use such funds; first, for the proper maintenance of permanent roads and highways already established and constructed, and the balance of such fund shall be used annually for the construction of new permanent roads and highways.

Other bills introduced in the Nebraska legislature affecting owners and dealers is

one making it unlawful for any dealer to sell gasoline that has a gravity less than 63 degrees Beaume or failure to brand every cask or barrel containing such products with figures denoting the gravity. Every person purchasing gasoline must keep it only in barrels, casks, packages or cans stenciled "gasoline." No person is allowed to adulterate gasoline, and all gasoline must be tested before being sold. A violation of any of these clauses will be liable to a fine of \$100 or imprisonment not to exceed 20 days, or both. Another bill permits of the construction of street railways having gasoline for their motive power.

A bill providing for a dealer's license, both front and rear number on motor cars; regulating the speed limit in cities and towns and on public highways; prohibiting intoxicated persons or those under 16 years of age from driving or operating a motor vehicle, and for the observing of signals by driver of horses on public thoroughfares, was introduced in the Nebraska legislature a few days ago. There are several additional clauses, among which are the following:

Section 1—A license and number shall be issued to any person, firm or corporation having for sale motor vehicles, which shall be designated as dealers' licenses, to be used only while exhibiting motor vehicles on the public highways for prospective buyers and within a radius of 5 miles of their respective places of business. The fee for a dealer's license shall be \$5 for a period of 1 year, the ownership of which may be transferred by making application to the secretary of the state upon blanks prepared for that purpose. The fee for a transfer shall be \$1. In addition to the figures and the word "Neb." there shall also be displayed the word "dealer" to be of the same style and size as provided for in section 6246 of Cobbe's annotated statutes of Nebraska for the year 1907. A new number shall not be issued as a substitute for one previously issued until all arrearages on the latter have been paid.

Section 3—No persons shall operate a motor vehicle on any public highway of this state at a speed greater than is reasonable and proper, having regard to the traffic and use of the highway, or so as to endanger the life or limb of any person, or in any event in the crowded or well populated portions of a city, town or village, at a greater rate than 1 mile in 6 minutes, or elsewhere in a city, town or village at a greater rate than 1 mile in 4 minutes, or elsewhere outside of the city, town or village at a greater rate than 20 miles per hour, subject, however, to the other provisions of this section.

Section 4—Any person operating a motor vehicle shall at request or on signal by putting up the hand, from a person riding or driving a restive horse or other draught or domestic animal, bring such motor vehicle immediately to a stop to allow such horse or animal to pass, and if traveling in the same direction, use reasonable caution in passing such horse or animals, and the operator or occupant of the motor vehicle shall render necessary assistance to the party having in charge a horse or other draught animal in so passing. Provided, however, any person who shall violate any provisions of this section shall be liable for all damages incurred.

#### TAXICAB REGULATIONS

The bill passed by the last congress appropriating money for the District of Columbia, contained the following provision regarding taxicab rates:

"That the commissioners of the District of Columbia are directed and authorized,

after due investigation, to prepare and put in immediate operation, subject to change from time to time, a reasonable scale of charges by cabs, taxicabs and public vehicles, for the transportation of passengers in the District of Columbia, and the tariffs so prepared shall be the maximum charges that may be collected in the District of Columbia."

Preliminary steps toward fixing the maximum charges for taxicab service are now being taken. The authorities have communicated with the managers of the several taxicab companies extending to them an invitation to a conference with the authorities, when their views on reasonable rates will be heard.

As a companion measure to the one fixing standard maximum charges, the district commissioners have promulgated a regulation prohibiting the use of any inaccurate taximeter and for the test of meters in use on taxicabs by the police department. The enforcement of this new regulation will be taken up at once. The hack inspector is charged with the duty of inspecting and testing the meters. A fine of not more than \$40 is provided for a violation of the new regulation.

#### ONE JERSEY BILL KILLED

A marked example of the change of heart among New Jersey legislators anent motor legislation was given last Thursday when a bill introduced in the house by Voorhees, of Middlesex, empowering the governor to appoint marshals with power to arrest without warrant any persons guilty of violating the law was bowled over by a big margin, only three favorable votes being recorded. The measure provided that appointments of marshals would be made on the indorsement of fifteen freeholders. Voorhees explained that the bill was desired by residents of rural districts for the suppression of crime in the absence of constables. Many of the opponents of the measure saw in it a new scheme to trap motorists; others declared that it gave power likely to be abused—and all hands dropped on it.

#### STRICT IN PHILADELPHIA

After repeated warnings the judges of the Philadelphia courts have decided to adopt stringent measures in combating the speeding evil. The first unlucky wight to feel the heavy hand of the law in this respect was Harry Brutslin, a chauffeur, who last October ran down and seriously injured Miss Ada Fadeley. Brutslin was convicted of "aggravated assault and battery," and sentenced to 1 year in Moyamensing prison. Before sentencing Brutslin, Judge Sulzberger expressed his condemnation of reckless speeding within city boundaries.





# The Readers' Clearing House



## ROAD CONDITIONS IN NEVADA

**H**AWTHORNE, NEV.—Editor Motor Age—I am a subscriber to Motor Age, and as yet have failed to see any illustrations showing the motoring conditions in Nevada. I am sending Motor Age two photographs which show the roads encountered in this state between Hawthorne and Austin. One photograph is taken near the Lone summit and the other is the Berlin lot, where it was necessary to jack up the car and fill in with dirt and use the robes under the wheels. The car is a 1908 Thomas Flyer.—G. A. Ashby.

## TIMING OF VALVES

Chicago—Editor Motor Age—Will Motor Age give me some information concerning the valve timing on a four-cycle motor? Would it be advisable to adjust the valves to open and close an equal number of degrees beyond the dead centers—that is, if the inlet opens 20 degrees beyond the upper dead center, would it be proper to close it 20 degrees beyond the lower dead center? Are there any good motors timed like this?—W. L. Orr.

The timing of motors admits of the greatest arguments, and definite laws governing same cannot be laid down. It is customary, in fact general, to open the exhaust valves before the bottom dead center. One maker opens the exhaust when the piston is 13-32 inch from the bottom center, that is before the center is reached, and keeps the valve open until the piston has reached the top dead center and is  $\frac{1}{8}$  inch beyond it, so that the exhaust valve is open for 236 degrees, whereas the exhaust stroke is generally considered to be only 180 degrees, or from the bottom to the top dead centers. A maker of a four-cylinder machine opens the exhaust valves 40 degrees before bottom and keeps them open until 5 degrees after top dead center. This same maker opens the intake valve 15 degrees after top dead center, and does not close it until 30 degrees after the bottom dead center, or until after the first sixth of the compression stroke has taken place. It might be concluded from this that while the piston is coming up on the compression stroke it would be forcing the gases out of the intake valve, but this is not the case, the entering force of the gases being the greater. It also must not be overlooked that on the first 30 degrees of the compression stroke there is not much rise to the piston. It is general to keep the intake valve open until the piston is partly up on the compression stroke, the number of degrees the valve is held open after the bottom dead center running as follows: 30, 24, 33, 35, 42, 30, 35, 35, 34, 23, 14, 39, 25, etc. In nearly every case the intake valve opens after top dead cen-

**EDITOR'S NOTE**—In this department Motor Age answers free of charge questions regarding motor problems, and invites the discussion of pertinent subjects. Correspondence is solicited from subscribers and others. All communications must be properly signed, and should the writer not wish his name to appear, he may use any nom de plume desired.

ter, the figures ranging as follows: 13, 15, 26, 19, 14, 15, 8, 16, 24, 12, 15, etc. In some cases motors are timed when the intake opens on the dead center and closes as high as 30 degrees after the bottom dead center. With exhaust valves the opening is invariably anywhere from 45 degrees before the bottom dead center is reached, the reasoning being that the power portion of the explosion stroke is expended long before the piston reaches the bottom of the stroke and the sooner the exhaust valve is opened the sooner are the hot gases given an opportunity to get out of the cylinder. One manufacturer goes even further, opening the exhaust valve more than 52 degrees before the dead center, and holding it open until almost at the top dead center. There is much diversity as to when the exhaust valve should close, some closing it before the top dead center, others after. Examples of where the exhaust valve is closed before the dead center are rare, usually ranging from 6 degrees before up to the dead center. Over 95 per cent of the makers close the exhaust valve after the dead center, some 15 degrees after, others 8, others 5, some 10, some 11, some 12. These figures show the general trend. There are a few cases where the valves open and close on the dead centers. Your question as to opening the intake 20 degrees after the top dead center and closing at 20 degrees after the bottom dead center would not give as great power as if the valve were opened a little earlier and perhaps held open a little longer. The above figures are taken at random from 1910 American cars.

## PARTS OF MAGNETO SYSTEM

Howell, Mich.—Editor Motor Age—Will Motor Age give me, through the Readers' Clearing House, the names of the parts which make up the standard ignition systems? For example: The magneto systems require other parts besides the magneto and wiring. What are they? I have an idea of each part but not of a complete ignition system. Where can I secure good books on motoring, motors, and especially ignition system?—A Subscriber and Novice.

In a high-tension magneto system all that is needed is the magneto, carried on the motor, four high-tension cables to the plugs, and a wire to a switch on the dash. If a low-tension magneto is employed the magneto is carried on the engine, and a

non-vibrating coil is located on the dash, in which coil the voltage of the current generated by the magneto is raised. This high-tension current is then returned to the distributor on the magneto, from which it is delivered to four high-tension cables to the spark plugs. In a battery system the parts needed are storage battery or dry cells, four-unit coil on the dash, a commutator on the motor, spark plugs, and the usual wiring. Some magnetos are marketed today which generate an alternating current, but which have not a distributor on them, so that in conjunction with them a four-unit coil on the dash and a commutator on the engine are needed. A good book on magneto ignition is "Motor Ignition Appliances," by H. T. Hawley, which can be secured from the Class Journal Co., 1200 Michigan avenue, Chicago.

## MAKES MORSE SILENT CHAINS

Wausau, Wis.—Editor Motor Age—Through the Readers' Clearing House will Motor Age inform me where I can purchase the Morse silent chain and sprocket for same?—John E. Curtis.

The Morse Chain Co., Ithaca, N. Y., manufactures these chains. Sprockets for same may be obtained from some of the regular gear and chain manufacturers.

## FOUR-CYCLE MOTOR IGNITION

Providence, R. I.—Editor Motor Age—Will Motor Age kindly tell me the proper way to time the ignition in a four-cycle motor? When I set my motor to fire on dead center at the minimum speed, upon advancing the spark to the maximum point it will fire about 2 inches before reaching dead center. The cylinder size is 3 by 2 $\frac{1}{4}$  inches. At what point before reaching center, or what is the greatest distance down the cylinder, is it permitted, with good results, to fire a charge while running at a maximum speed?—B. H. Sheppard.

The proper amount of advance to give a spark in the cylinder of an engine is best determined by practice and varies greatly in different motors with the same cylinder sizes. The limit to the advance of the spark is solely governed by the point at which pounding begins, owing to too much advance. A motor will run with a certain advance of the spark on the level without pounding, but immediately the car encounters a slight grade pounding often ensues and the spark must be retarded. So it is with every motor, the limit of advance being determined by the point at which pounding takes place. It would appear that 2 inches is too much on a 3-inch stroke unless the speed of the motor is enormously high. In view of the fact that varying the point of ignition is under the driver's control at all times, it is but natural that the



driver will sooner or later discover the ignition period which is most productive of power, which will be the one generally used. With your engine the coil must act very slowly or the advance is so great as to prevent proper compression of the mixture. It may be your commutator is loose, giving a slower spark than if tight on its shaft.

#### A. L. A. M. CATALOG

Louisville, Ky.—Editor Motor Age—Will Motor Age tell me where I can secure a copy of the A. L. A. M. catalog showing one or more of the cars built by the members of this association?—W. E. Caldwell Co.

These catalogs may be secured from E. P. Chalfant, general manager of the A. L. A. M., 7 East Forty-second street, New York, N. Y.

#### ODD SIZE OF TIRE

Wichita, Kan.—Editor Motor Age—Will Motor Age tell me if there are any tire manufacturers making a tire 30 by 3½ inches, or 30 by 4, to fit a 30 by 3-inch rim? I have a No. 10 Buick and would like to put on larger tires.—D. P. Gerety.

The Buick representatives recommend a 31 by 3½-inch tire in your case. It is an odd size, but such concerns as Diamond, Fisk and Goodyear and others carry it.

#### ALL KINDS OF QUESTIONS

Milwaukee, Wis.—Editor Motor Age—Through the Readers' Clearing House please answer the following questions: I wish to clean the Schebler carburetor on my 1908 Wayne car and want to know the best method of adjusting the same. Of late I have noticed a wheezing sound in the carburetor. What is the cause and how can I remedy it? The motor seems to lack power, the front plugs are always sooty while the rear ones are clean. How can this be stopped? How can I quickly discover where a leak in the radiator is located? What contrivances are used to

scrape the cylinders? How often should the oil in the crankcase be drained off and a fresh supply furnished? What is the safest way of holding a tire, the clincher rim, or a quick detachable like the Good-year, etc.?—A Subscriber.

The best method of adjusting the Schebler carburetor is to open the needle valve and start the motor; then close the throttle to a nearly closed position and begin closing the needle valve, continuing to close it until the motor just begins missing because of lack of fuel. This gives the regulation for low speeds. For high speeds the gasoline adjustments should be turned, giving the necessary lift to the needle valve as per the instruction book. Additional adjustments can be had by varying the tension on the auxiliary air valve. Should the motor start missing on high speeds tighten the auxiliary valve spring, which will result in greater gasoline feed. The sooting of the front plugs is due to too much oil and if the oil is fed to the front cylinders by separate leads it would be better to cut down the flow somewhat. It may be the sooting of these plugs is due to loose piston rings and the fitting of new rings would obviate the trouble. A radiator leak can be located only by the moisture on the tubes or radiator fins. What is the nature of the scraping you intend to do in the cylinders? The greatest care should be exercised with reference to the cylinder walls lest they be scored which would result in a loss of compression. As to how often the oil in the crankcase should be changed, it depends on the nature of the lubricating system. If you use a car with a mechanical oiler, in which the oil is pumped to the cylinders and bearings and then drops into the crankcase, it would be well to clean this out every 6 weeks. On the other hand, if you use a circulating system, in which the oil pump is located in a reservoir beneath the crankcase and the oil is circulated and recirculated, being fil-

tered once in each circuit, it is advisable to drain out every 300 miles. Both the clincher and quick detachable rims are safe. With a clincher rim lugs are used to prevent the beads of a tire getting out of the clincher lips. In the quick detachable tire, in which one of the rings is removable, lugs are not used, but the bead of a tire is made non-extensible, so that it will not stretch and allow the tire to come off. Wherever a quick detachable ring is employed care must be taken to know that a quick detachable tire, with a stiff bead, is employed.

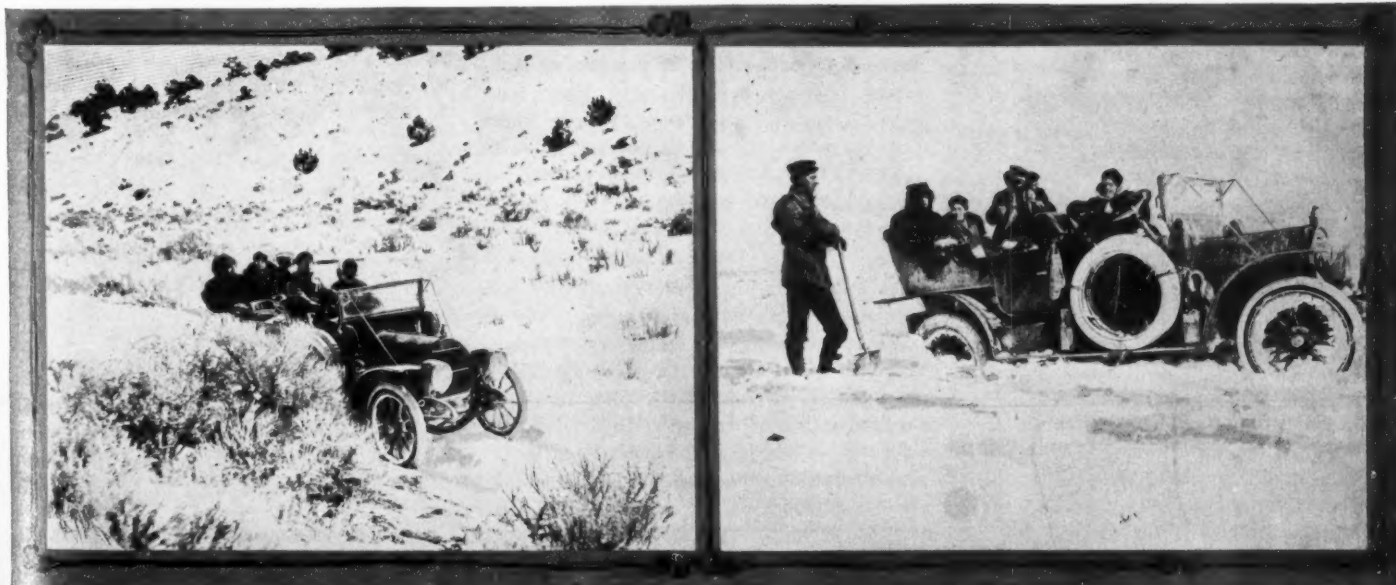
#### ANOTHER FORMULA

Moncton, N. B.—Editor Motor Age—Through the Readers' Clearing House will Motor Age inform me what the horsepower should be of a four-cylinder valve-in-the-head motor with cylinder sizes 4½ by 5 inches? Has Motor Age ever heard of the following formula? Square the bore of the cylinder, multiply by the stroke, multiply by the number of cylinders and divide by 10. This will give 40¼ horsepower. A. L. A. M. rating only gives 32.2.—B. F. R.

Motor Age has never heard of the formula of which you speak, which takes into consideration the length of the stroke and divides by 10. Generally where stroke is considered in a formula the crankshaft speed is also a factor. This formula gives 25 per cent higher rating than the A. L. A. M. Motor Age would like to know of readers who have heard of this formula before and would like if B. F. R. would state what he knows concerning the source of same.

#### ALUMINUM FOR LAMPS

Kansas City, Mo.—Editor Motor Age—Through the Readers' Clearing House will Motor Age answer the following? As various exposed motor parts are now made of aluminum, why could not lamp trimmings be made of it and one step further



MOTORING EXPERIENCES WITH THOMAS FLYER AMID NEVADA SNOWS

on in the campaign for less work be taken? Would a three-cylinder two-cycle engine give less vibration than a four-cylinder four-cycle engine and the same as a six-cylinder four-cycle engine? Are there any satisfactory air-cooled two-cycle engines manufactured now? Is a unit power plant with the same style of clutch cheapest to construct? Does it claim to lose less power?—P. D. Rouse.

A four-cylinder four-cycle car from a mechanical point of view is a perfect balance, has a crankshaft throw of 180 degrees, and the parts all balanced when constructed. The three-cylinder two-cycle motor is better for power in that it gives three explosions or power strokes per crankshaft revolution, whereas the four-cylinder four-cycle car gives but two. The six-cylinder four-cycle car gives three explosions per revolution, or the same number as the three-cylinder two-cycle type. The amount of vibration occasioned by any motor is largely a matter of mechanical construction, particularly when four and six cylinders are employed. In a six-cylinder construction it is often reduced as compared with the four because of the small cylinder sizes and the overlap of the explosion, the result being a more continuous torque. There are very few air-cooled two-cycle motors at the present time, Motor Age knowing of only one or two concerns manufacturing such. The unit power plant is a cheaper proposition to manufacture than where the motor is located at one point in the frame and the transmission at another.

#### HORSEPOWER OF A SIX

Clinton, Ill.—Editor Motor Age—Through the Readers' Clearing House will Motor Age inform me the horsepower of a six-cylinder engine with a 5¼-inch bore?—I. W.

According to A. L. A. M. rating the power of a six-cylinder engine with a cylinder bore of 5¼ inches is 66 horsepower.

#### WANTS AN ELECTRIC DEPARTMENT

Milwaukee, Wis.—Editor Motor Age—I should like to ask why it is that the columns of Motor Age are devoted almost exclusively to the gasoline motor car, its construction, care, repair, accessories, etc.? Perhaps Motor Age does not realize that although most of its readers are devoted to the gasoline car, some of us are interested in the electric as well. The number of users of electric cars is growing rapidly. Some of us are fortunate enough to own both a gasoline and an electric car, and although we all cling to our first love, still we are interested in the new vehicle because we are getting from it such satisfactory service for certain occasions, and if Motor Age will devote a little more of its space to as interesting matter concerning the electric vehicle as that which it gives to the gasoline car I believe it will improve an already excellent sheet. Many readers of these pages would like to see Motor

Age establish and maintain an electric department.—E. B. Rose.

It is quite true that Motor Age devotes a great many of its pages to gasoline cars, which is directly due to the greater percentage of gasoline cars owned in the country. Motor Age would be glad to use whatever valuable information it can secure on electrics, but it has frequently found that the electric manufacturers do not care to have the constructions of motors, controllers and other things exploited to any great extent. Motor Age reported fully all of the long-distance road performances of electric machines.

#### OBJECTS TO OUTSIDE CONTROL

Madison, So. Dak.—Editor Motor Age—The illustrations of C. G. Slater's idea of a touring car body in Motor Age, issue March 4, are quite unique and interesting. There is one important item that Mr. Slater has overlooked. A body that incloses the front seat as much as shown in the illustrations is, to my notion, not consistent in having the two operating levers on the outside. They should certainly be placed on the inside of the body to carry out the idea portrayed. My new 1909 car has the two levers on the inside, and I certainly think this is a step forward for convenience and appearance.—H. H. Frudenberg.

You are certainly correct in having the levers on the inside in the type of body referred to. Before a couple of more seasons pass, and the experiences of cold winters have made impressions on drivers, the inclosed front seat will have become general. Bringing the windshield nearer back in roadsters is but one of the signs of the times towards increasing the comfort of front seat passengers in the winter. It is quite absurd to have no protection for the driver at the ends of the footboards, whereas doors at this point would add 100 per cent to his comfort. On several roadster cars commendable improvement is being made in this line by leather boots which button to the dash and also to the ends of the seats. The value of doors is demonstrated in a four-passenger surrey type of body in comparison with a toy tonneau type which has side doors for the tonneau. In the surrey type in dusty weather the air currents around the ends of the front seat carry clouds of dust into the space in front of the back seat, whereas where doors are fitted this dust cloud is directed to the rear of the car.

#### REGARDING SWITCH PLUGS

York, Neb.—Editor Motor Age—I have driven a motor car for 2 years and invariably have left the switch plug in place, though of course not with the switch on. I learned today, in reading the Maxwell instruction book, that such a course should not be pursued, as it uses up the current

the same as short-circuiting; that is, when the plug is left in it uses up the dry cell batteries or storage batteries. This is contrary to my opinion, as I have always believed that, though a plug was left in, the battery would not be harmed unless connected by switch. Am I right or wrong?—J. M. Oppen.

You are right in believing that no harm will come to your batteries when the switch is off, even though the plug is left in place; but there are switches without levers, where direct contact is made by sticking in the plug. Of course in such a case the plug must be removed. In previous years Maxwell cars were equipped with switches of the plug and lever type, and it is believed if such a statement were made in the instruction book it was merely to caution against possible trouble, viz.: If the plug is left in, the driver in leaving the car might brush by the switch with his clothing and swing the lever over into contact; or some youngster is liable to come along and swing it over in a spirit of curiosity. Consequently it is quite plain that if the circuit is closed in the timer the batteries would quickly run down.

#### SHOULD BE NON-PARTISAN

Chicago—Editor Motor Age—Referring to the criticism from "Kenosha" in Motor Age, March 11 issue, regarding the Readers' Clearing House: This department is undoubtedly one of the most interesting and instructive portions of Motor Age. Many readers look over these columns before anything else. To be reliable the department should be non-partisan. The insidious advertisement, fairly well disguised, is frequently to be seen, as well as the frankly signed article written in the interest and under the name of some manufacturer. The articles of the manufacturers are of interest, but would it not be well to segregate them? Personally we agree with "Kenosha."—La Salle.

#### HARBURG TIRE PATENTS

Detroit, Mich.—Editor Motor Age—Referring to the query in Motor Age, March 11 issue, I beg to state that through a typographical error the seventh line should have read "page 14, issue of January 21, 1909." As I understand it the Excelsior motor cycle will easily cover 60 miles per hour with a five to one gear, the motor making about 3,000 revolutions per minute. On a stripped racing model with a two and three-fourths to one gear 80 to 90 miles per hour is claimed. The Harburg Tire Co. has several patents on demountable rims. Could Motor Age give me the number of its patent covering the use of a hinged clamp in combination with the removable rim? Will concave pistons increase the power of a motor, and have they been used with any success?—W. B. O'Brien, Jr.

The patents held by the Harburg Tire Co. can be obtained by writing direct to this concern. The arguments in favor of the concave piston are that it gives a





spherical combustion chamber, which many designers claim to produce greater power than the hemispherical type. The majority of motor car designers are coming to the conclusion that the piston must be as light as possible, that with a light piston there is less vibration and higher crankshaft speeds are obtainable. In order to have a light piston the top should be arched, or slightly convexed, this permitting of a lighter construction than the flat piston head or the concave style. One or two makers who have used the concave types have discontinued them.

### ON IGNITION MATTERS

Lockland, O.—Editor Motor Age—Through the Readers' Clearing House will Motor Age give me a little advice on the following? I have a two-cylinder engine fitted with a single coil, with contact on engine shaft and no distributor, which of course causes a spark to appear in both cylinders at the same time. Does this firing make the spark weaker in the working cylinder, or is it just a waste of the dry cells? Will the addition of a timer be of any benefit? What are the advantages of the storage battery over dry cells? In gauging compression by gauge does one figure the pressure by turning the engine slowly, or at a pretty fair clip? On turning the engine slowly I get about 45 pounds; turning it faster, I may get 80 pounds. Which is correct?—J. E. M.

The addition of a timer will be a benefit, as you will get a better spark and save current, owing to the fact that the entire electromotive force of your induction coil is used to overcome the resistance of but one spark plug instead of two. Some of the advantages of a storage battery over dry cells are: long life; constant potential, which means that a steady voltage is maintained throughout the life of the charge; and less liability to become affected by moisture. The outside of a dry cell is made of zinc, which also forms one of the electrodes, and a paper case and a coat of varnish is the extent of its protection. Your figures show that your engine does not hold its compression, therefore you would have to gauge the compression while the engine is turning over at its average speed. Test one cylinder while the engine is running on the other.

### WEIGHTS OF CARS

New York—Editor Motor Age—The ability of a motor car to climb a hill or to demonstrate its speed is illustrated in hundreds of hill-climbs and endurance races, and every manufacturer has the opportunity of comparing the merits of his car with others in events of this kind, but there is one very important point in connection with a car regarding which the buyer seems to be unable to obtain reliable information, and that is the matter of weight. It is the custom on the part of many salesmen, and one very much to be regretted, to make statements regard-



ing weights which are at variance with the facts, and these statements are unfortunately not confined with the car which they are selling, but give information regarding the weights of competitors' cars and thereby misinform prospective customers. The Lozier Motor Co. feels that it has suffered through statements of irresponsible salesmen of other concerns, and has started a campaign of education on the subject of motor car weight. We are preparing to give certificates that our big seven-passenger touring car weighs 3,550 pounds with regular equipment of lamps, horn, tanks, tool boxes, trunk rack, and that the big six touring car with the same equipment weighs only 3,760.—Lozier Motor Co.

### THICKNESS OF INNER WALLS

Twin Falls, Idaho—Editor Motor Age—Through the Readers' Clearing House will Motor Age tell me what the thickness of the inner wall of an engine should be, how much space is generally allowed for water, and what is the outside shell? I presume the size of the engine will have something to do with the thickness, but I would like an approximate measurement.—J. B. Hall.

The thickness of the inner wall of a motor car cylinders is approximately  $\frac{1}{8}$  to  $\frac{1}{4}$  inch; the space allowed for water generally ranges from  $\frac{5}{8}$  to  $\frac{3}{4}$  inch; and the outside wall of the waterjacket is the same as the inside. Of course a decided increase in the size of the cylinder will necessitate a greater thickness, and where the cylinders are exceptionally small a small decrease in the thickness is possible.

### STRAIN ON DIFFERENTIAL

Little Rock, Ark.—Editor Motor Age—Through the Readers' Clearing House will Motor Age inform me as to the relative amount of strain on the differential on the divided rear axle of a shaft-driven car and on the differential on the jackshaft of a double side chain-driven car, the horsepower, gearing, etc., being equal? Almost all of the owners of shaft-driven cars tell me that they have at some time had trouble with their differential, but I have not heard the same complaint of the double side-chain cars. Is this the usual experience, and if so, what is the explanation?—Owner.

The strain on a differential caused by driving the car is the same whether that differential is located in conjunction with the transmission under the center of a car body in a chain-driven car, as it is when located within the rear axle housing in a shaft-driven machine. Where owners have trouble with differentials in shaft-driven cars, the trouble is due to weak construction of the rear axle housing, by which is meant the casing containing the differen-

tial as well as the tubes extending from the differential out to the wheels and within which are the driveshafts for transmitting the power from the differential gears to the hubs of the wheels. This housing has to support the entire weight of the rear of the car, and, if it is not made sufficiently strong, it is natural there will be a sag in the center, and the rear wheels will toe outward at the bottom. When this takes place the proper alignment of the driveshafts in the axle and the differential is disrupted, and in all probability the gears cease to mesh correctly as they should with the axle in perfect alignment. With a sufficiently stout and rigid rear axle casing, and with the differential properly mounted therein there should be no more trouble with a differential in a shaft-driven car than in a chain-driven one.

### OILING TROUBLE EXPLAINED

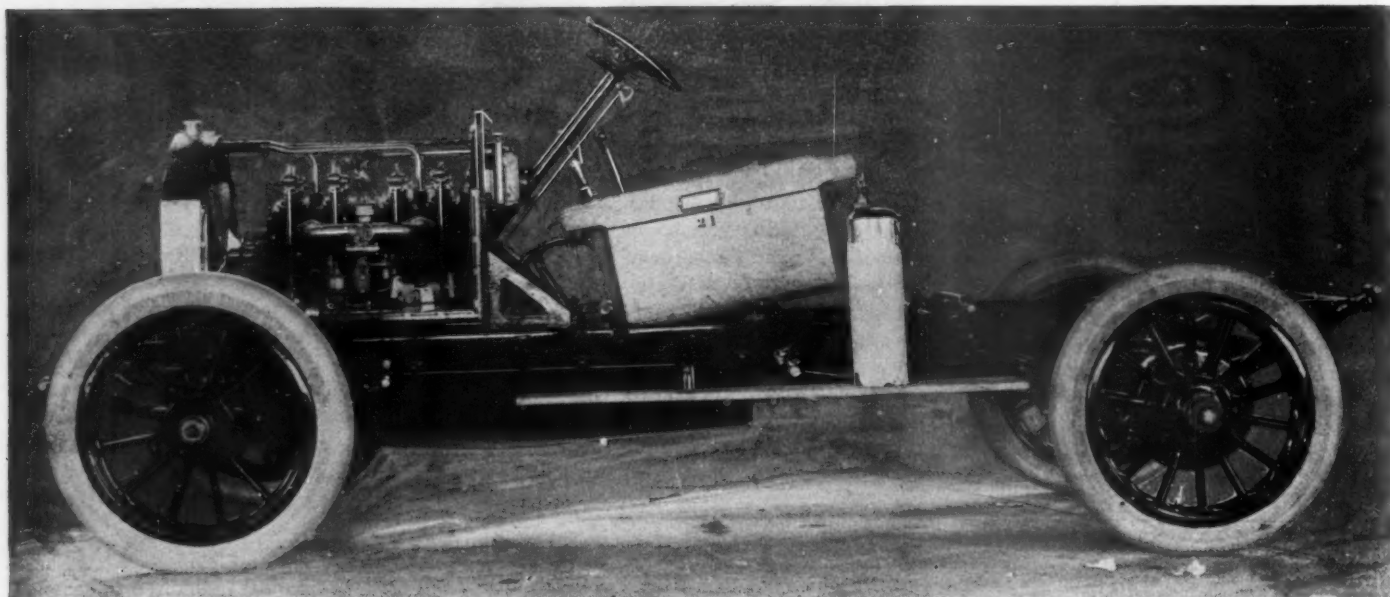
Syracuse, N. Y.—Editor Motor Age—I note on page 29 in a recent issue of Motor Age the trouble with a two-cylinder Brennan motor. In reference to the oiling of this motor 1 pint of extra heavy cylinder oil in the crankcase is sufficient. Oil should be fed to the crankpins and the main bearings from an oiler, twenty to twenty-five drops per minute supplied to the crankpins, and about two drops per minute to the main bearing. The oil will not reach the combustion chamber unless there is upwards of 1 quart in the crankcase, at which time it would be flooded. With reference to relief or check valve in the crankcase, if the oil is operated by the compression in the crankcase it is not advisable to use a relief valve, as compression would be needed to operate the oiler. If check valves are used  $\frac{1}{8}$ -inch is sufficient size, as this would allow the compression to escape but would not allow the air to return the crankpit. Where sufficient oil is fed to the crankpins it will maintain about  $\frac{1}{2}$  pint in the crankcase, which is sufficient for a constant splash.—B. M. C.

### CHICAGO-SOUTH BEND ROUTE

Chicago—Editor Motor Age—Through the Readers' Clearing House will Motor Age give me some information relative to the route between Chicago and South Bend? I have been informed there are two routes, and desire to know which is the better.—W. C. Kendricks.

There are two routes—one via Michigan City, and the other through Valparaiso. The Michigan City route, which in all probability is the better one though somewhat longer, is by way of Hammond, Hessville, Highlands, Hobart; thence through Crissman, Burdick, Otis, Michigan City, Rolling Prairie and New Carlisle to South Bend. The Valparaiso route is the same as far as Hobart; from Hobart the route is through Wheeler, Valparaiso, Westville and Laporte to New Carlisle; thence to South Bend. Motor Age will be glad to furnish detailed directions upon request.

## ASSEMBLY METHODS IN USE IN FACTORIES



CHASSIS WITH FITTINGS AS DELIVERED TO FINAL ASSEMBLY DEPARTMENT

**I**N every factory the problem of cheapest and quickest assembly of the car is a big factor to be wrestled with by the factory superintendents. In the majority of up-to-date factories the motor is assembled in one place, the transmission in another, the rear axle in a third department, the front axle in a place of its own, the steering gear in its individual locality, and, when it comes to the general assembly of the chassis, the frame is brought from one department, the motor from its, the transmission from its, and so on. In addition to these a score or more of pieces which were not assembled in any particular department are brought into the general assembly room.

The rule in a factory is that raw materials, such as forgings and stampings, manufactured parts, purchased from outside concerns, are put into one stock room, and are generally designated the raw stuff. After these parts have been machined and manufactured ready to be used in the car, they are removed to the finished stock room. In some factories every part entering into a motor, transmission or rear axle, is checked into the finished stock room, so that the assembling force must go to this stock room for all its parts. For example, as soon as a crew assembling a transmission gets its order to assemble one, it must go to the stock room and get all the necessary parts, such as gearcase, gears, shaft, bearings, every nut, locknut, washer, necessary; in brief, everything that is needed in making the transmission. So with all the other departments. They must take their order blanks to the clerk of the stock room, who issues to them from stock all of the necessary parts.

### Assembling Now Systematized

In every factory many details and variations from this general principle are used.

It used to be that workmen would draw from the stock room sufficient supplies for a day's work, or, in some cases, a week's work, or a month's work. This method proved too lax; in instances, parts were lost, many were stolen, not a few were carelessly broken, and the assembly department proved too expensive.

In the Stoddard-Dayton plant a particularly careful system is used. When a car is assigned, the assignment sheet showing every detail needed in the car goes to the stockkeeper at the stock room. In this department all of the parts, no matter how small or large, needed for the car, are brought together. The chassis-erecting department gets the frames, wheels with their bearings, motor, universals, transmission, magneto, dash, steering column, radiator; in fact, every single piece, even to the required number of lock washers, nuts and cotter-pins, which are put into assembly boxes and delivered to the erection crew. There are just enough parts to build this particular chassis. If there are any bolts, washers, or cotter-pins left the inspector knows at a glance that the workmen have forgotten something. If, on the other hand, the erection crew have to make requisition for additional parts, he knows that they have spoiled some pieces in the erection and an investigation is made at once.

### Assembling Transmissions

Transmissions are taken to their assemblers the same way. The case, gears, shafts, bushings, bearings are each put in a compartment in the assembly-box and the whole box delivered to the assembler of that particular transmission. The record of the transmission, together with the name of the assembler, is kept and if for any reason it is necessary to learn any particular regarding any par-

ticular numbered transmission, the facts are easily arrived at by consulting the records and assembler of that part.

When an assignment ticket goes into the factory, work on the different parts of the car are started simultaneously. The chassis is started on one department; the body, which has already been built, is assigned to the paint department. If the car is to receive a top the top department starts on its work. This is so carefully arranged that when the chassis comes through its road test to go to the paint shop, the other parts are so near completion that after the chassis has received its several coats of paint, they are ready to be put upon it. Here, again, the value of system comes into play.

### System of Stockkeeper

The stockkeeper takes the chassis, body, hood, fenders, lamps, Prest-O-Lite tank, tops, glass fronts or any other accessories which are included in the customer's specifications and delivers them *en masse* to the final assembly department. There is no confusion, caused by the several different workmen having to look up the different parts for the particular car on which he is working. Every piece has been delivered to him and it is his duty to put it together as he finds it.

The value of this system has been so thoroughly demonstrated in the plant that to return to the old method of allowing the workmen to draw their own supplies would throw the organization into a turmoil. In visiting the different departments, one is impressed most forcibly with the order which prevails in each department. There is no confusion, no running around of the men getting this piece and that. His work is brought to him; it is his duty to do the work. When it is finished the truckman comes and gets it.



## TIPS BY UNCLE SAM ON FOREIGN OPENINGS

WASHINGTON, D. C., March 22—Vice-Consul-General Oscar S. Heizer furnishes the following information concerning the use of motor cars in Constantinople, which is published in the daily consular and trade reports:

Formerly there were many obstacles to the importation of motor cars into Turkey. Recently their admittance was authorized, but it was thought that motorists were unfavorably looked upon in high circles, and consequently the rich Turks, who were expected to buy motor cars, abstained from making purchases. With the new régime has come entire liberty, but nevertheless they have not bought motor cars. In fact, 2 years of short harvest has made hard times, the recent events have given anxiety, and subscriptions and patriotic holidays have made large demands upon everyone. The winter season, which has already begun, makes the running of motor cars very difficult and very little business along this line can be done before spring. The bad state of the roads forbids speed. However, there is a chance to sell these cars. When the rich natives come to consider motor cars as the exterior sign of wealth many will want to have them for parading in the streets of the capital and suburbs. The fact that second-hand cars can be sold on advantageous terms will no doubt procure some buyers, and perhaps when rich native people possess cars they will build roads so that they may be able to use them.

There are no regulations whatever preventing the entrance and circulation of motor cars in Turkey. The motor cars pay 11 per cent duty ad valorem, the same as every other article of merchandise. If the customs officials place an excessive valuation upon the machines they may be turned over to the custom-house and it will be

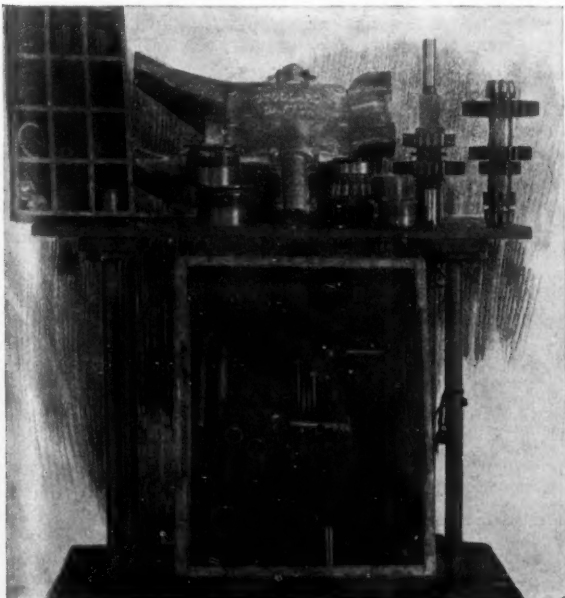
obliged to take over the machines at the appraised value, less 10 per cent duty. Recently a Belgian machine appraised at \$3,474 was reduced to \$987, the custom-house not wishing to buy it. Nevertheless the custom-house took it at that price, not wishing to reduce its appraisement further, although the motor car was second-hand. As yet there are no taxes levied upon motor cars by the Turkish authorities. A car passing through Turkey must pay duty on entrance, which is refunded on leaving the country. There are firms here who would take up the business if an inexpensive type could be put on the market. But unless the American manufacturer is willing to send a representative to look over the ground and establish an agency and place a machine on exhibition, there is little chance of doing any business, because the agents here will not pay cash in advance, while European manufacturers offer more liberal terms.

Consul Jesse B. Jackson, of Aleppo, invites the attention of manufacturers of motor cars to the opportunity of developing a lucrative business in that portion of Syria. Following is his report:

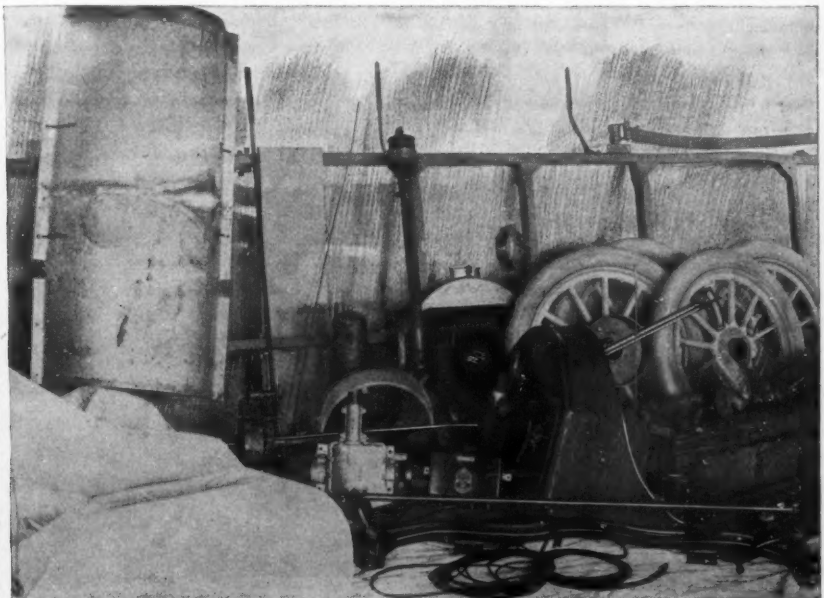
There are but two cars owned and operated within this province, one of 40 and the other of 12 horsepower. Perhaps the most important reason for this is that the people here have not yet realized the advantages of their use, but when they do they will be in demand by nearly every man that can afford the price of a machine. It is safe to predict that at no far distant day motor cars will be quite common in these parts, and that the time is now ripe for making an extra effort to introduce American-made machines before the appearance of the European cars, for once on the market they will be difficult to dislodge. The most practical manner in

which to accomplish this would be for some enterprising firm to send here at an early date two or three cars of different sizes, and a representative to demonstrate them, as it is very difficult to succeed in such a business in Turkey by the mere use of illustrated and descriptive catalogues. Should such an attempt be made in all of the larger cities and towns it is certain to meet with success. For instance, should such a man come here and select a reliable importer, certain ones of which can always interest people, make his demonstration and appoint the proper resident representative, sales could probably be made on the spot, and soon a lucrative business would be established in each populous center. This consulate has frequent inquiries concerning American products of various kinds, but when it comes to the question of purchasing they first want to see the goods, or a sample thereof.

It would also seem to be most practicable for dealers to give more attention to the sale of small, light machines of 10 to 20 horsepower, which are cheaper than the heavy high-speed motors, as they are more applicable to the country and will sell more readily than the higher-priced machines. Further, the mechanism is less complicated and more easily adjusted by the native mechanics when out of order. The difference in the consumption of gasoline, which is an expensive article in this country, is also an important item to be reckoned with. The small, good hill-climbing machine of about 12 horsepower, designed for town and suburban use, with a sufficiently strong frame to carry a coupé or small landaulet body, and carrying from three to five persons, should prove attractive and find a ready market. Also the light touring car for five to seven persons, with about 20 horsepower.



TRANSMISSION COMPARTMENT AS DELIVERED



CHASSIS COMPLETE AS SENT TO CHASSIS ASSEMBLERS



# Motor Car Development

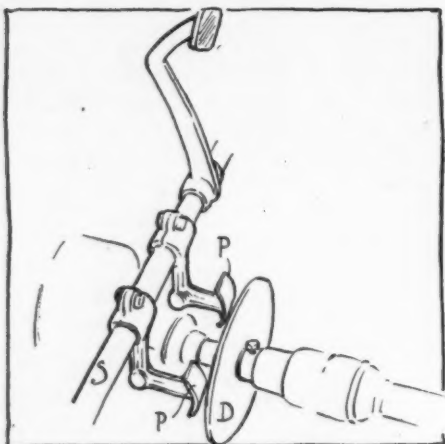


FIG. 1—MARION CLUTCH BRAKE

THE output of Marion cars, built by the Marion Motor Car Co., of Indianapolis, Ind., for this season will be 500 machines. The present force of 150 men being able to turn out three machines a day. During a recent visit to the factory, which consists of 32,000 square feet of floor space in the Industrial building at Tenth and Canal streets, twenty-one chassis were in the course of assembly on the floor, four others were in the paint shop and seven completed cars with bodies on were waiting shipment in the shipping department. The bodies of all of the cars are manufactured in the old plant of the Speed Changing Pulley Co. on East Washington street—in the opposite part of the city—at which plant the bodies for the Overland cars are also being manufactured.

Early in the year a report was circulated to the effect that the Marion company had been taken over by the Overland Motor Car Co., and that the Marion car would not be continued, which report was erroneous and which was circulated because some of the Overland stockholders bought the majority of the stock of the Marion concern and turned the Marion factory over to the building of one model of Over-

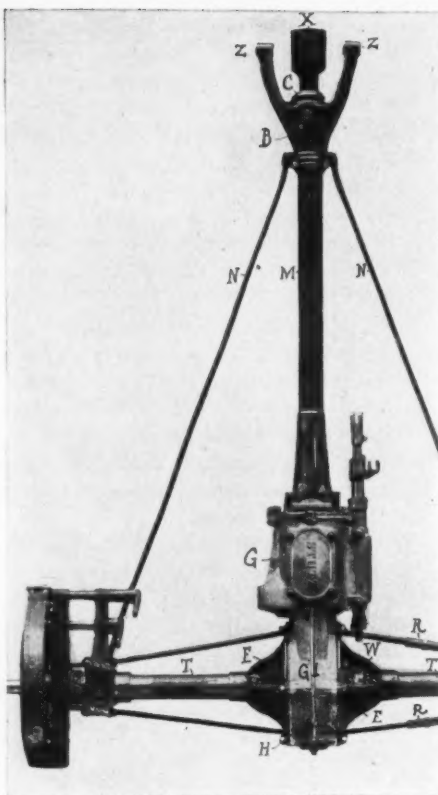


FIG. 2—MARION GEARSET

land machines, at the same time moving the entire Marion equipment and force into the Industrial building, which premises it now occupies. The entire Marion output for this season is being sold by the Marion Motor Car Sales Co., organized for this purpose in the past September.

## Marion an Improved Car

The Marion car is a considerably improved machine over last year, being a four-cylinder type, rated at 28.9 horsepower with 112-inch wheelbase and fitted with either five-passenger touring or toy tonneau body, the tonneau part being detachable in the latter model. The motor used is a model R Continental with 4¼-

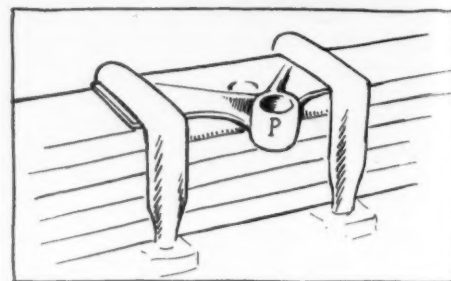


FIG. 3—MARION REAR FENDER SUPPORT

inch bore and 4½-inch stroke, cylinders cast in pairs with valves on the right, crankcase-contained circulating oiling system, Splitdorf low-tension magneto with dash coil and battery for reserve set, pump and fan water circulation, multiple-disk clutch, shaft drive, selective gearset incorporated with the floating back axle, double Thermoid rear axle brakes, dropped frame, adjustable steering column, I-beam front axle and scroll elliptic rear springs.

Particularly characteristic in the Marion is the Stutz combined gearset and rear axle, the design of Harry C. Stutz, who is in charge of the construction of the machines. This axle, Fig. 2, incorporates the gearbox, consisting of the case proper G and a ring extension G1, which forms the central part of the differential housing. The remainder of the differential housing is composed of the end pieces E, each of which is strengthened by four regularly-spaced, heavy webs W, into which the axle tubes T are secured. Two truss rods, adjustable through turnbuckles R, reinforce the axle housing, one at the front side, the other at the rear. The end pieces E bolt to the central portion G1, so that should the gearset—the shafts and gears—have to be removed it can be done by taking off the nuts holding the end piece in place—one of which nuts is designated H—and remove the end piece E, after which the shafts and gears can be extracted through the opening.

This car is propelled forward from the rear axle through the torsion tube M with-

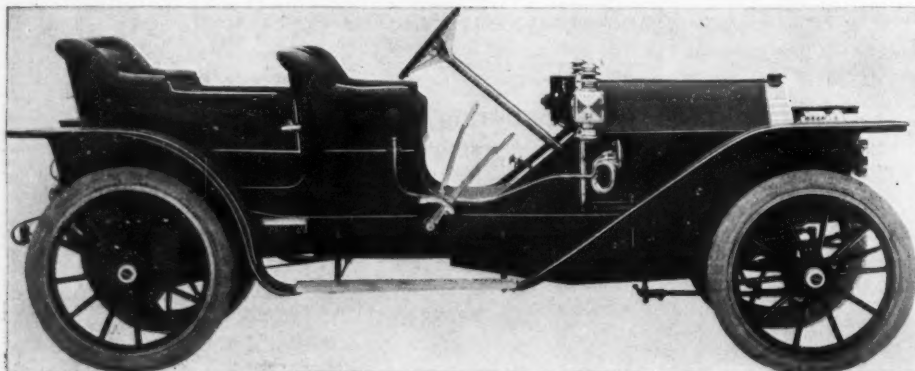


FIG. 4—MARION CHASSIS WITH TOY TONNEAU BODY

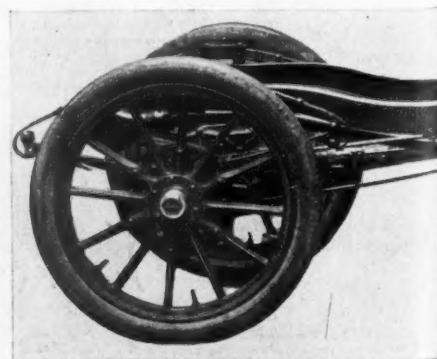


FIG. 5—MARION DROPPED FRAME



# Marion Car for 1909

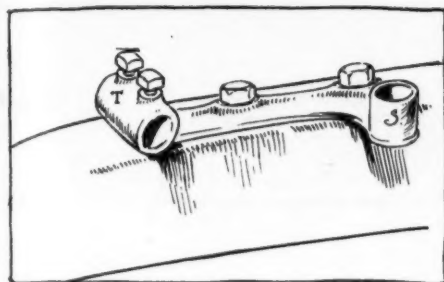


FIG. 6—MARION FRONT FENDER SUPPORT

in which is the propeller shaft, this tube being carried from a cross member of the frame through the Y yoke. With this arrangement all driving strain is entirely taken off the rear springs and there are no radius rods from the rear axle ends to the side pieces of the frame. The tube M has assisting it angular brace rods N, which attach at their forward ends to lugs on a collar on the tube. The Y yoke is not rigid with the tube M, but rotatable on it, there being a race of adjustable roller bearings within the hub part of the yoke with a compression grease cup fitted to lubricate them. In the angle of the yoke is an adjusting cap C for adjusting the bearings. A felt washer within the cap excludes dust. Each yoke arm ends in an eye hole Z in order that the yoke may hinge to the frame cross piece to allow of up and down movement occasioned by the action of the back springs. There is not any telescoping or longitudinal action in the tube, the rear axle tilting with the spring flexion. There is but one universal joint in the system, X marking its location, so that its axis is in alignment with the hinge movement at Z.

The cross piece supporting the forward end of the torsion tube is as illustrated

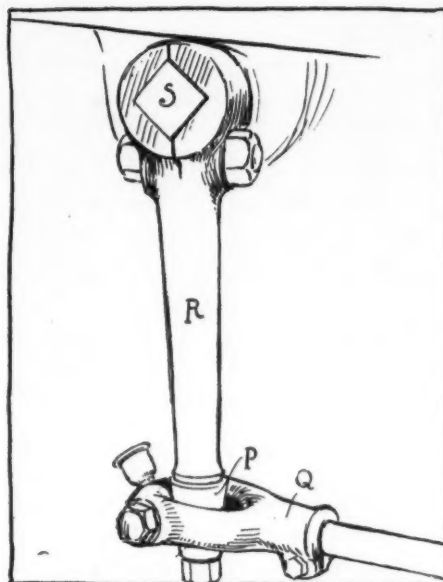


FIG. 7—MARION STEERING GEAR

in Fig. 8, a tubular member T held at each end in a socket fitted within the channels of the frame. On this cross part are attached two double arm parts K with horizontal forward extensions K to carry the clutch pedal shaft and a downward projection to each of which the torsion tube yoke hinges. The entire piece is stout, simple and quickly demountable. As may be seen in Fig. 9, a top view of the chassis, it makes a clean-cut construction.

## Sliding the Gears

To facilitate sliding of the gears in the gearset a brake is fitted on the clutch shaft in rear of the clutch, Fig. 1, so that with the clutch released the spinning of the disengaged disks is prevented. The disk D is on the clutch shaft and on the clutch release shaft is a curved foot P

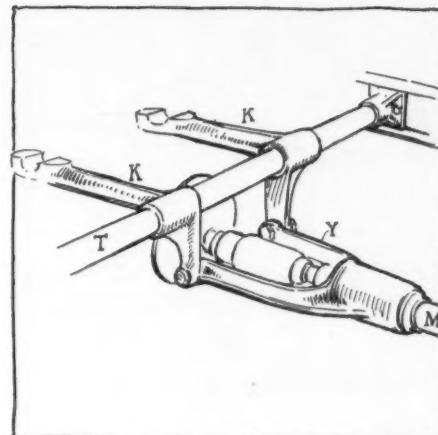


FIG. 8—MARION TORSION TUBE SUPPORT

which bears upon the disk face with the clutch out, but with the clutch engaged it is free of the disk. The part rotation of the clutch releases shaft S when the pedal is pushed forward to disengage it sufficiently to bring the foot against the disk. The clutch consists of twenty-seven hardened and ground steel disks arranged in the usual alternate sets and carried in a housing on the flywheel.

In the running gear of the car a few points of interest cannot be missed. First comes the 2½-inch drop in the frame side members in front of the rear axle; then, too, the front fender iron, Fig. 6, is a forging carried on the top of the frame with a vertical socket part S, in which the fender iron is carried and a cross piece T for supporting the lamps. The rear fender attachment, illustrated in Fig. 3, is a plate piece fitted to the spring, secured by the clips, and having a tapered socket part P for taking the fender iron.

The steering gear, which is of the worm-

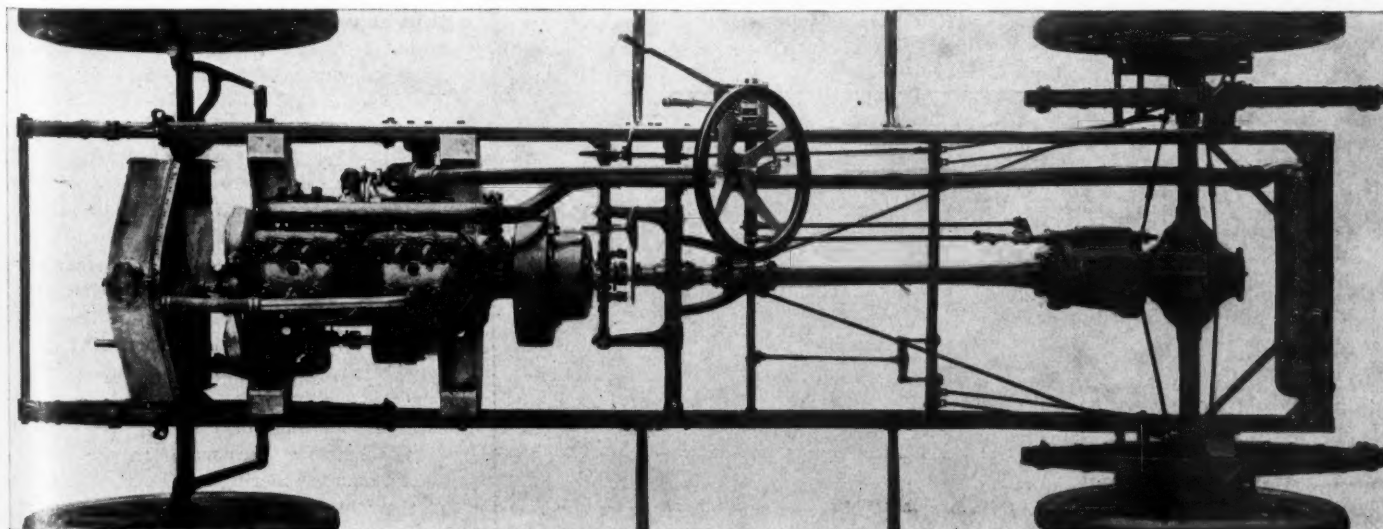
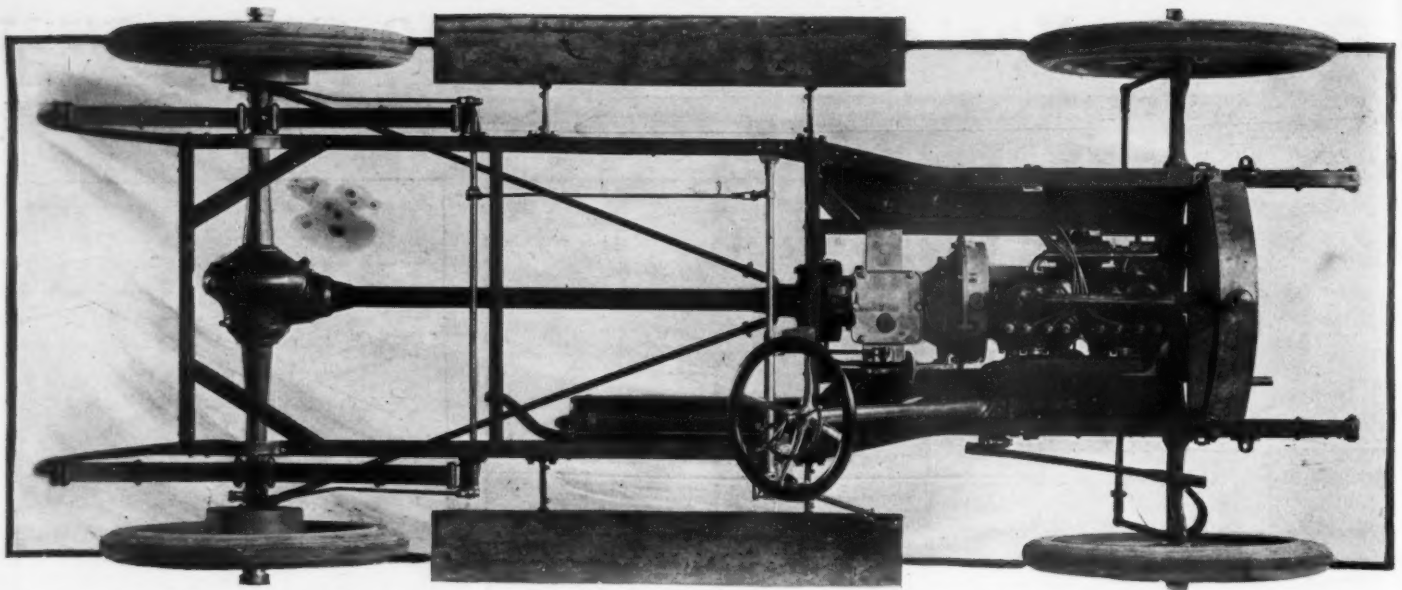


FIG. 9—MARION CHASSIS SHOWING STUTZ COMBINED GEARBOX AND DIFFERENTIAL ON REAR AXLE



CHASSIS OF HERRESHOFF CAR WITH UNIT POWER PLANT AND SHAFT DRIVE

and-wheel type, is carried, Fig. 7, from a bracket attached to the frame side member through which bracket the wheel shaft S passes, allowing the gear housing to be tilted as desired without interfering with the mounting of the bracket the dash of course retaining the steering column at the determined angle. The radius arm R is a square fit on the end of the shaft S and at its lower end carries a universal motion piece P, free to revolve on it and taking the transverse bolt V attaching the yoke Q thereto, this form of coupling being in contrast with the ball and socket type so universally used in the majority of steering gears. The frame has the side members without the customary offset at the dash, the motor being carried directly on them and so eliminating the necessity of a sub-frame. The bodies are straight line construction, fenders are conventional.

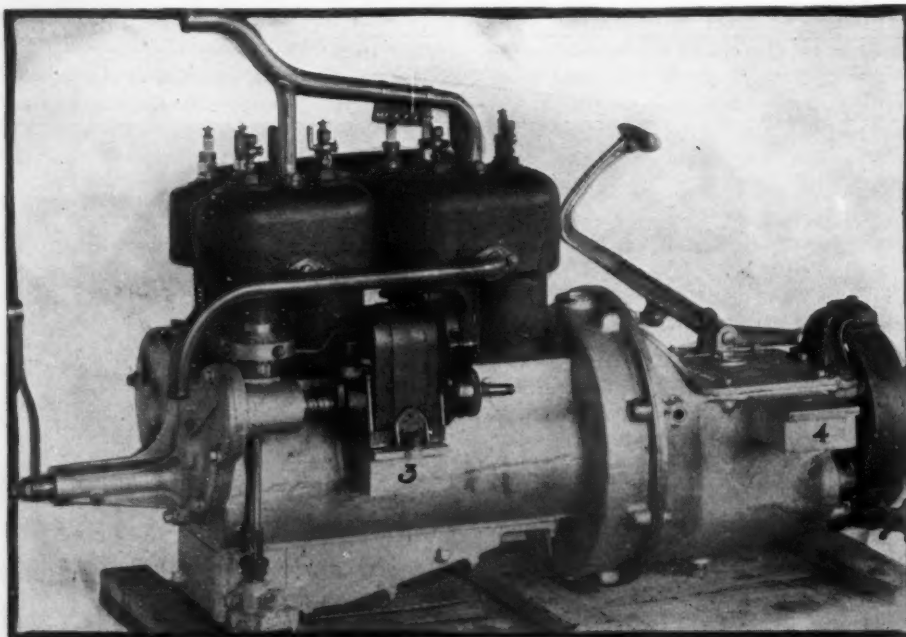
### Features of the Herreshoff

Published for the first time in *Motor Age* are the full details of the new Herreshoff, a Detroit product, which is being built by the Herreshoff Car Co., of Detroit, Mich., to which reference was made in the report of the Boston show. The general Herreshoff design can be grasped by a glimpse at the chassis illustration, which shows it to be a four-cylinder motor with twin cylinder castings, and having an inclosed flywheel, which facilitates in having as a unit the motor and selective gear-set, which are carried on subframe members. Four-point support, however, is used, two parts, 1 and 2, on the right side, and two points, 3 and 4, on the left, support 3 being used also as a magneto support, and located almost centrally on the crankcase instead of at the front end, like

support 1 on the opposite side of the motor.

This is an example of elimination of parts and should increase somewhat the stability of the center crankshaft bearing. Shaft drive is used, the propeller shaft being incased in a torsion tube, which has a ball and socket support at its forward end from a cross piece of the frame. Triangular brace rods extend from the tube at this point to the ends of the rear axle housing, so the driving of the car is through this torsion tube, leaving the semi-elliptic rear springs free to carry only the weight of the car. This, in general, is the structural layout of the machine. A hasty analysis of the car shows in addition the employment of thermo syphon water circulation without the use of even a fan, this apparently being eliminated by using a radiator which the maker claims is 50 per cent greater in capacity than actually required for cooling a motor of the Herreshoff size with 3 3/8-inch bore, 3 3/4-inch stroke, guaranteed to deliver 24 horsepower to the rear wheels and with a crankshaft speed regulation ranging from 200 to 2,400 revolutions per minute.

In addition to its thermo-syphon the motor is fitted with a complete double ignition outfit, with two sets of plugs. The Bosch high-tension magneto, with a contained distributor, is mounted on the left side, where it is most accessible, there being nothing but the intake water pipe adjacent to it. Also positioned on this side is a timer or commutator, used in the battery ignition system. The battery current which passes through the timer employs a four-unit coil on the dash, on which coil is the switch for going from one ignition system to the other. A fixed spark is employed on the magneto, there being no advance or retard provided, but on the battery the usual advance is furnished on the steering wheel. Lubrication of the motor is entrusted to a gear pump located on the bottom of the shaft which drives the timer, and which shaft is driven



LEFT SIDE OF HERRESHOFF MOTOR AND GEARBOX

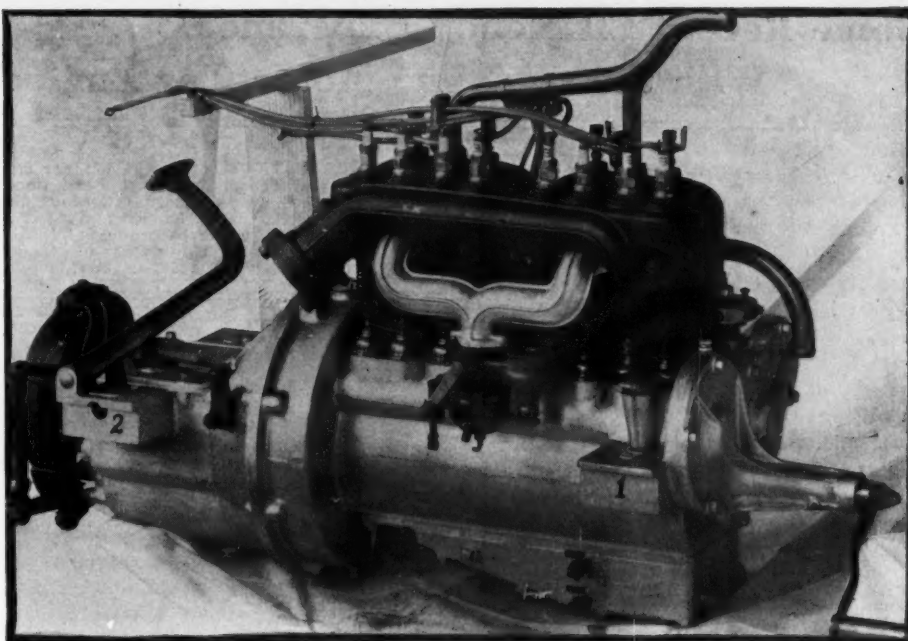


by spiral gears from the magneto shaft.

In the base of the crankcase is an oil reservoir with the maximum depth at the forward end but tapering towards the rear. The pump elevates the oil from this through a sight feed on the dash, whence it flows in a continuous stream to the crankcase proper, wherein a level is maintained into which the connecting rods dip, creating a splash system that oils the F & S bearings carrying the crankshaft and camshaft, the upper and lower connecting rod bearings and the cylinder walls.

The unit power plant is a study in simplicity, the crankcase being a one-piece casting, having formed integrally with it the casing for containing the flywheel. To the rear of this bolts the crankcase with its enlarged front end for housing the multiple-disk clutch. The top of the gearbox is a large rectangular plate secured by six studs. A further example of simplicity is the one pedal mounted on the gearbox arm, which pedal controls the disk clutch and the thermoid brake back of the gearset. The inter-connection of this pedal with the clutch appears in the right side illustration of the motor and is such that before the brake can be applied the clutch is disengaged. The clutch makeup includes twenty-five saw-blade steel disks operated in a compartment of their own and in a bath formed of 1 pint of oil and 1 pint of kerosene. The selective gearset with its three forward speeds has the shafts carried on F & S bearings and the gears made from projectile steel are very short and stubby. The control of the gears is conventional through a single lever at the right.

Both axles are of Timken construction, the forward one an I-beam design affording  $9\frac{3}{4}$  inches clearance, having the tie-rod between the steering knuckles back of it, and the steering arm carried above the axle proper. The rear axle is a semi-floating construction formed without truss rods and in which the axle tubes are of largest diameter where they attach to the differential housing. On the rear wheels are internal thermoid brakes, pedal-applied. The frame is narrowed perceptibly alongside the motor, but where the offset



RIGHT SIDE OF HERRESHOFF UNIT POWER PLANT

takes place the upper and lower flanges are much heavier. Over the rear axle the side pieces are arched upwards so as to lower the center of gravity of the car. The car has 100-inch wheelbase.

#### CONNECTICUT CYCLE COIL

The Connecticut Telephone and Electric Co., Meriden, Conn., is manufacturing a coil for one- or two-cylinder motor cycles, which is smaller than the average one. It is designed to operate on 3 volts or two ordinary dry cells.

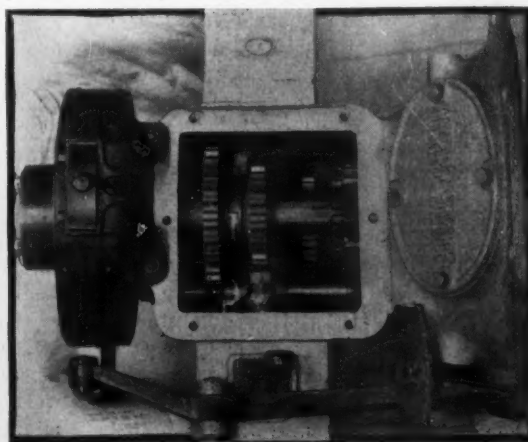
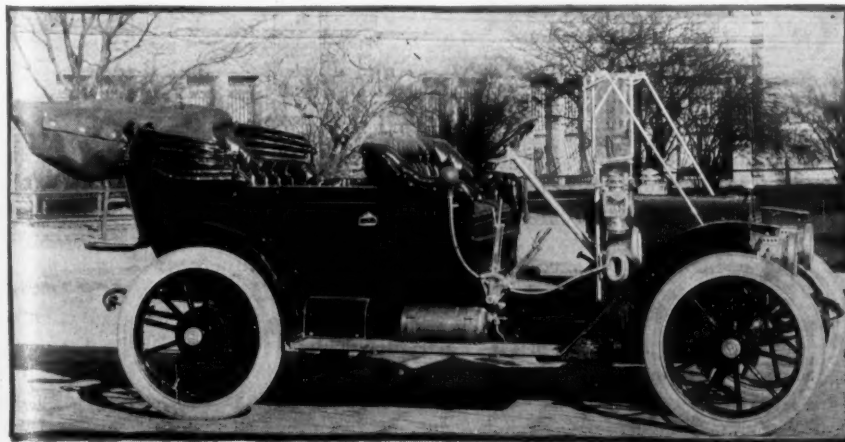
#### PAYNTER ANTI-SKID TREADS

The Paynter-Spitzli Co., Utica, N. Y., manufactures the Paynter anti-skid tread for pneumatic tires, in which two methods are taken to achieve anti-skidding results. The first is a series of diagonal grooves across the tread, which grooves are discontinued for a brief space in the center of the tread. The object of these is to achieve a result similar to that obtained by chains for mud, slush and snow. In addition to these grooves is a series of cups in the tread part, arranged in two

rows between each two grooves. These cups are intended to prevent slipping on pavements; their operation is that of expelling the air from them, the same as when the palm of the hand is pressed upon a flat surface. It is the atmospheric pressure that really does the work and is an invariable quantity.

#### DEMONSTRATING GREASES

The Keystone Lubricating Co. exhibit space at the Boston show contained a differential and transmission set driven by an electric motor and lubricated by No. 3 density Keystone grease. Ten to 12 pounds of grease were needed in the case. In operation the grease sticks fast to the rotating gears, forming a thick glib penetrating between the gear teeth. The gears are at all times practically smothered in the grease, it not being thrown off from them onto the sides of the case. While in use the grease is claimed to slowly circulate within the gearbox so that all parts of it are used, and not that portion in the immediate vicinity of the gears used and reused.



HERRESHOFF TOURING CAR AND GEARSET SHOWING STUBBY GEARS USED

## Some Recent Efficiency Experiments With the Gasoline Motor Car Engine

TWO years ago Professor Callendar read before the institution a paper on the "Influence of Size on Thermal Efficiency." Professor Callendar's conclusions excited great interest, and to the present author, at least, they appear to have been difficult of attack, on the basis of the experimental evidence which then existed, though, as that evidence was admittedly incomplete, there was much room for argument and difference of opinion. A good deal of further information on the behavior of gas engines has been accumulated since Professor Callendar's paper was read, and the author thinks that it may be of interest to the institution if some of the questions which were raised in it are re-opened and discussed afresh in the light of the new data. It appears to him also that the scope of the inquiry may with advantage be widened, so as to include some other matters which are at least equal to thermal efficiency in practical importance.

It will be remembered that Professor Callendar's conclusions, so far as they rested on tests of actual engines, were based on a comparison of efficiencies obtained for gas engines, by the research committee of the Institution of Civil Engineers with that of a small air-cooled bicycle engine tested by himself. There were at the time but few experiments on large gas engines which could compare for accuracy and completeness with those carried out by the institution committee; and it need hardly be said that Professor Callendar's own measurements were not challenged. At the same time it appeared that the data were incomplete in certain important respects. Professor Callendar, in order to arrive at a formula which should express the effect of size upon efficiency, made the assumption that, other conditions, which he precisely defined, being the same, the heat loss and the efficiency of an engine are independent of the speed at which it is run. Though there was much to be said in favor of that assumption, it could not be said that there was direct experimental proof of it, and it did not command universal acceptance. Upon it, however, Callendar based

the formula  $0.75\pi(1 - \frac{1}{D})$  for the efficiency of an engine of cylinder diameter  $D$  inches, whose compression ratio is such that the air-cycle efficiency is  $\pi$ . The formula expressed with an accuracy which went far to show that it was substantially right, the efficiency of engines so diverse in type as those mentioned above. Nevertheless, it was pointed out in the discussion that this agreement might be fortuitous, and that before it could be accepted as final it must be shown how

**EDITOR'S NOTE**—Abstract of a paper entitled "The Effect of Size and Speed upon the Performance of an Internal Combustion Engine," by Bertram Hopkinson, M.A., M.I.C.E., read before the Incorporated Institution of Automobile Engineers of Great Britain on February 10, 1909.—Part I.

far, and under what conditions, it could be considered as applicable to other instances.

### Experiments With Various Engines

The author has recently completed a study of a Crossley gas engine of 40 horsepower, with  $11\frac{1}{2}$ -inch cylinder, running at 180 revolutions per minute. It has been possible for him in the 2 years during which he has been engaged in the work to deal with certain points which the research committee could not fully investigate, or could not touch at all, in the few days which were available for their experiments. He has also been able to carry out some tests on a four-cylinder Daimler engine with  $3\frac{1}{2}$ -inch cylinder running up to 1,200 revolutions per minute; and these tests have been carried considerably further by one of his pupils, Esmond Morse. More recently the opportunity for further research has been provided by the Wolseley Tool and Motor Car Co., which has placed at his disposal one of its well-known four-cylinder motor car engines. The experiments on the latter engine have only been in progress for a short time, and the results are not complete, but some are available which the author hopes may throw light upon the problems in hand, and be of interest to the institution.

### Motor Comparisons

The author proposes, therefore, to make a comparison between the Crossley engine and the high-speed type as represented by the Daimler and Siddeley, especially the latter, in respect of efficiency, power, and heat-loss. The most important aspect of heat-loss being the temperatures in the engine which it causes, it will be considered mainly in that connection. Direct experimental evidence of the relation between the temperature and heat-loss is available in the case of the Crossley engine, but not in the other case. The conclusions here are, therefore, to some extent speculative; the author advances them with some reserve, only remarking that the extreme importance of the subject in the design and operation of gas engines justifies discussion of it even on the basis of data which are not complete.

The Crossley engine develops 40 horsepower on the brake in ordinary full-load working at a speed of 180 revolutions per minute. The Siddeley is a four-cylinder motor of the kind which the manufacturers are now fitting to their cars. It gives

about 34 brake horsepower at a speed of 1,000 revolutions per minute, and is capable at 1,600 revolutions of more than 40 brake horsepower. The following comparative table shows the relation between the two motors as regards dimensions and speed. The dimensions refer to a single cylinder of the Siddeley engine:

TABLE I

	Crossley	Siddeley	Ratio
Diameter, inches	11.5	4.62	2.5
Stroke, inches	21	5.08	...
Piston area, sq. ins.	104	16.8	6.2
Stroke volume, cub. ft.	1.26	0.0495	25.5
Total cylinder volume, cub. ft.	1.495	0.0655	22.8
Compression space, cub. ft.	0.235	0.016	...
Compression ratio, r	6.37	4.18	...
Piston speed, ft. per min.	630	850†	0.74
Piston displacement per min, cub. ft.	113	24.7†	4.6

The Daimler engine was made in 1906; it gives about 16 brake horsepower at a speed of about 1,000 revolutions per minute. The cylinders are 3.56 inches diameter by 5.11 inches stroke, and compression ratio, 3.85. It will be seen that the Daimler engine is very similar to the Siddeley, and the results are given mainly for the sake of confirmation.

### Results of Tests

The measurements of indicated power in the Siddeley engine were based on those of brake-power. The gasoline used with Shell motor spirit of density .721, and a large number of tests by the author and by others on gasoline of various brands, and of density varying from .700 to .730, having shown that its calorific value was always within 1 per cent or 2 per cent of 18,900 thermal units per pound, that was assumed to be the value without further measurement.

The following table shows the results of two tests at full load and 930 revolutions per minute, which were in every respect satisfactory:

TABLE II

	A	B
Work given to dynamo, h. p.	28.9	29.7
Friction, h. p.	4.5	4.5
Pumping	1.0	1.0
Total i. h. p.	34.4	35.2
Gasoline supply, lbs. per minute	0.308	0.310
Efficiency, reckoned on gasoline supply	0.252	0.256
Exhaust-gas analysis—		
CO <sub>2</sub> , per cent.	13.5	13.1
O <sub>2</sub>	1.4	1.3
CO	0	0.3
H <sub>2</sub> O, calculated	15.6	15.9

According to the composition of the gasoline, the volume of steam, if the combustion is complete, should be 1.05 times the combined volume of CO<sub>2</sub> and CO. The ratio is in fact 1.15 in analysis A, and 1.20 in analysis B. In all the analyses which the author has made on the exhaust from gasoline engines or with which he is acquainted, this ratio comes out too high, even when the combustion is apparently just perfect—with no CO, and a small excess of O. This fact seems to indicate that combustion is rarely quite perfect. In order to test this matter further the residue after absorption in analysis B was exploded with electrolytic



gas, with the result that a further 0.7 per cent of CO<sub>2</sub>—reckoned on original volume of exhaust-gas—was obtained. This experiment was performed on two samples, and as control experiments with air containing small traces of gasoline vapor of known amount showed that it was reliable within about 0.2 per cent—reckoned on original volume of exhaust-gas—it proves conclusively that there may be combustible matter in the exhaust even with 1.3 per cent of oxygen. Counting the CO—0.3 per cent—the total of this combustible matter found in test B would suffice to form about 1 per cent of CO<sub>2</sub> and a certain quantity of steam. In heating value it is probably equivalent to at least 3 per cent of the gasoline supply. If we allow for this unburnt gas, the efficiency in test B, reckoned on the actual heat-supply, is over 0.26. The author considers that the efficiency obtained with complete combustion at a speed of 930 revolutions per minute certainly lies between 0.255 and 0.265. It may be taken as 0.26.

#### Competitive Efficiencies

The manufacturers kindly supplied the author with a note of their test on the engine, according to which 32½ brake horsepower was developed at 930 revolutions per minute on a gasoline consumption of 0.310 pounds per minute. It seems probable that the engine losses were for some reason rather less in their test, but they can hardly have been less than 3.5 horsepower—which would give a mechanical efficiency of over 90 per cent. Taking that figure the thermal efficiency works out at 0.26. It is possible that the combustion was rather better in the manufacturers' test than in the author's. One difference in conditions which may have affected the matter was, that whereas the manufacturers warmed the carbureter, the author did not. The precise effect of this has yet to be investigated, but it is at least possible that it improves combustion.

In his experiments on the Daimler engine Mr. Morse found the efficiency to be 0.255 at 900 revolutions per minute, reckoned on the total gasoline consumption, the exhaust containing no excess oxygen or CO.

#### Coal Gas Reduced Efficiency

In comparing these results with the efficiency of the Crossley engine, regard must be had to the effect which strength of mixture has upon efficiency. The author found that as the percentage of coal-gas present in the cylinder contents of that gas engine was increased from 8.5 per cent to 11.5 per cent, the efficiency fell from 37 per cent to 32 per cent. In a discussion of these results it appeared that the determining factor in the efficiency of an engine of given compression ratio and size was the temperature reached in the explosion, which again depended on the heat supply per unit volume of the products of combustion. Looked at from this point of view the Siddeley engine must be re-

garded as working with a high mixture strength, the air present being but little more than is just sufficient to burn the gasoline. In order to arrive at an idea of the heat value of the mixture in the Siddeley engine, we may assume the temperature of the cylinder contents at the end of the suction stroke to be 150° C. This figure is rather uncertain, but it is probable that, if anything, it is underestimated. The charge taken is known by the exhaust gas analyses and gasoline consumption to be .032 standard cubic foot of air and gasoline vapor per suction. This is diluted with the contents of the clearance space. The volume of the clearance space is .016 cubic foot, and the pressure rises at the end of exhaust to about 3 pounds per square inch above atmosphere. If the temperature of the contents at this point be taken as 250° C. the volume reduced to standard conditions will be .01 cubic foot. This would give a total charge of .042 standard cubic foot and a suction temperature of 150° C. In fact, the temperature of the clearance gases is almost certainly higher than 250° C., and the suction temperature higher than 150° C. The pressure at this moment is 14.7 pounds per square inch, and the volume .0655 cubic foot. The volume of the cylinder contents when reduced to standard conditions is therefore .042 cubic foot. The heat supply per cycle per cylinder is 3.05 thermal units, equivalent to 73 thermal units per standard cubic foot of the mixture before explosion. After explosion there is an increase in specific volume of about 5 per cent, so that the heat supplied per standard cubic foot of the products of explosion is 70 thermal units. In order to get an equivalent heat supply in the gas-engine, in which there is a decrease of volume of 4 per cent, the cylinder contents before explosion must contain 11.2 per cent of Cambridge coal-gas, having a lower calorific value of 600 thermal units per standard cubic foot. The corresponding efficiency is 0.325, so that we can formulate the following table of comparisons between the three engines:

	Crossley	Siddeley	Daimler
Compression ratio, r	6.37	4.18	3.85
Air cycle efficiency $\eta = 1 - \left(\frac{1}{r}\right)^{0.4}$	0.522	0.435	0.417
Measured efficiency	0.325	0.26†	0.265
Relative efficiency	0.62	0.60	0.61
Relative efficiency, Callendar's form	0.685	0.59	0.54

It will be seen that Professor Callendar's formula considerably over estimates the efficiency of the Crossley, is about right for the Siddeley, and is too low for

† The efficiency of the Siddeley includes an allowance for unburnt gas. If this were ignored and the efficiency calculated on actual consumption of gasoline in the author's tests, it would be 0.254, and the relative efficiency would be 0.585. In the Crossley engine the combustion was quite complete, and in the Daimler tests the unburnt gas was not determined, and no allowance was made.



the Daimler. On the other hand, as might be expected from the data on which it is based, it gives a very close approximation—within 2 per cent—to the efficiency of the large gas engine when the latter is run under the ordinary conditions of practice, viz., with a weak mixture giving maximum efficiency on the brake power. It would appear, however, that in constructing a formula of this type, which takes account of dimensions only, the large disturbing effect of mixture strength ought to be eliminated by running the engines under identical conditions in this respect. If this be done, it would appear that in similar engines running at the same piston speed the relative efficiency is much more nearly independent of the dimensions than Professor Callendar's formula would indicate. It should be observed that the piston speed in the above-quoted tests was about 25 per cent greater in the two car engines than in the gas engine; but, as against this, is to be set the fact that both the former have large pocket-spaces, and therefore greater cooling surfaces than engines geometrically similar to the Crossley.

#### Efficiency Varies With Speed

If the efficiency of an engine of given compression ratio and piston speed is nearly independent of its dimensions, it follows that in its effect upon heat-loss the greater proportion of surface to volume in a small engine must be largely counteracted by the shortness of the time of contact between gas and metal. The efficiency of an engine will then vary with its speed to a material extent.

The fundamental postulate on which Professor Callendar's formula was based, on the other hand, was the independence of heat loss and engine speed; the greater turbulence of the gases at high speeds being supposed to increase their effective conductivity to an extent sufficient to counteract the shorter time of exposure. This argument loses much of its force when applied to the flow of heat at a time when the piston is nearly at rest, and when the gases have had some opportunity of settling down after the inrush caused by suction. Under these circumstances it may be doubted whether the heat loss will differ greatly from that following an explosion of the same mixture at rest in a closed vessel of the same size and shape as the compression chamber. The author has shown by direct measurement of the heat loss following such an explosion that it varies as the square root of the time elapsed since ignition. (Proc. Roy. Soc. A., Vol. 79.) It seems quite probable that a similar law governs the loss in an engine, in which case the loss of efficiency due to heat loss would vary inversely as the square root of the speed in the same engine, and would be inversely as the square root of the linear dimensions in similar engines running at the same piston speed.



# The Realm of the Commercial Car



FLEET OF WHITE STEAMER TAXICABS RUNNING IN ALBANY, N. Y.

**C**HICAGO'S taxicab ordinance as prepared by Howard W. Hayes, assistant corporation counsel, was introduced into the city council Monday night and was referred to a committee, as had been anticipated. The bill was drawn up only after a consultation with the concerns operating taxicab lines in Chicago, the effort being due to a campaign that is being waged to systematize the business in the Windy City. The bill starts out by defining the term taximeter to mean "any instrument or device attached to or to be attached to a public vehicle designed or intended to measure the distance traveled, to record the time said vehicle is in use and to record the fare or charge therefor." The term taxicab is applied to all public vehicles propelled by power other than muscular power to which is attached a taximeter. Tariff 1 is defined to be the fare to be charged for conveying one or two passengers; tariff 2 the fare to be charged for carrying more than two. The

## Chicago's Taxicab Bill

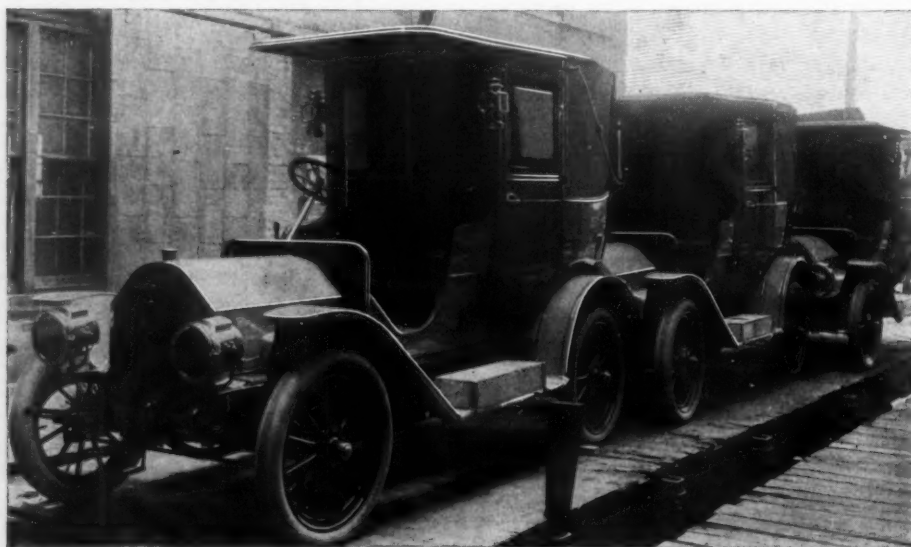
bill provides that no taximeter shall be directly or indirectly connected, attached or operated from the rear wheel or axle.

One of the important clauses provides for an examination of the taximeters once in every 6 months by the inspector of weights and measures. In case of complaint and the payment of a fee of 50 cents this inspector shall examine an instrument complained of, the fee to be returned if the complaint is found to be true and paid by the concern controlling the taximeter. Provision also is made to prevent a taximeter which has been tested for one size of wheels to be applied to another vehicle with different size wheels. In case the rig is not hired by the hour the fare must be announced at the termination of the service before the flag post is changed. Another section that is generally commended is one that forbids

a driver carrying one or two passengers when the taximeter registers tariff 2. Violation of this means a fine of not less than \$5 nor more than \$50.

Section 9 is devoted to the rates to be charged, which do not vary materially from those now in existence. Tariff 1 provides a charge of 30 cents for the first  $\frac{1}{2}$  mile or fraction thereof; 10 cents for each  $\frac{1}{4}$  mile thereafter and 10 cents for each 6 minutes of waiting. Tariff 2 provides for a charge of 30 cents for the first  $\frac{1}{3}$  mile or fraction thereof; 10 cents for each  $\frac{1}{6}$  mile thereafter and 10 cents for each 6 minutes waiting. Waiting time is held to include the time during which the taxicab is not in motion, beginning with its arrival at the place to which it has been called; or if engaged in the street or at the stand, beginning at the time of the engagement. No charge shall be made for the time lost for the inefficiency of the taxicab or its driver, or for time between a premature arrival in response to a call and the time for which the taxicab was ordered. No charge shall be made for a distance of less than 1 mile traversed by a taxicab going to respond to a call, but for a greater distance a charge of 20 cents a mile may be made for a mile or a fraction of a mile in excess thereof.

Any taxicab may be hired by the hour provided the passenger shall specify that service before entering the vehicle. When engaged in such service the flag shall be turned down in a non-recording position. When a cab is engaged by the hour the speed shall not be less than 10 miles an hour except where a higher rate of speed is contrary to the speed regulations. The tariff will be \$3 for the first hour or fractional part when one or two passengers are carried and \$2.50 for each additional hour. For three or more the rate is \$4 for the first hour and \$3 for the following ones. Hand baggage may be carried with-



FIRST SHIPMENT OF CARTECAR TAXICABS



out charge, but a fee of 20 cents may be exacted for carrying trunks on the outside of the vehicle.

Drivers are protected by a section which allows him to demand the fare before the passenger enters the rig and he may refuse to carry any person who does not comply with his demand. The ordinance winds up with a section which provides a fine of from \$5 to \$50 for a violation of any of the sections or for using a taximeter that registers improperly or inaccurately. If passed the ordinance will go into effect May 1.

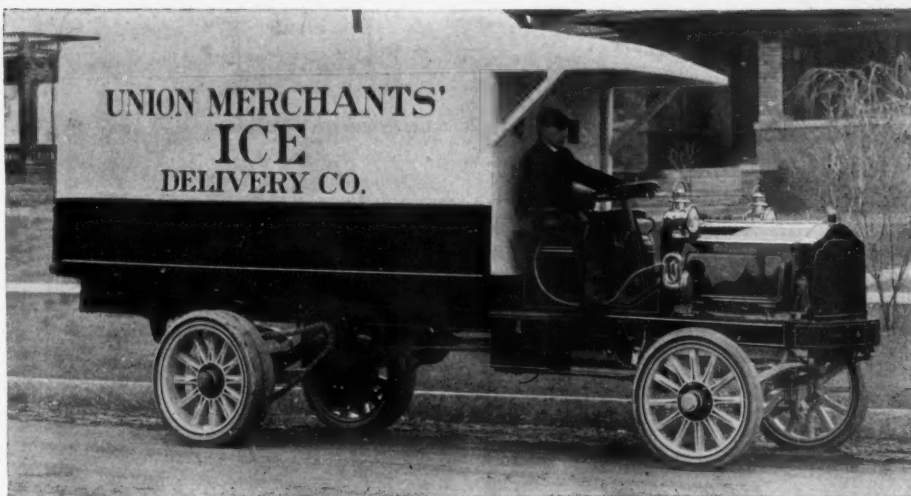
Preceding the introduction of the ordinance into the council, there was a meeting Saturday at the Chicago Automobile Club, at which time the Automobile Transportation Association of Chicago was formed, the object of the organization being to establish uniform rates. Owen H. Fay was elected president, Charles E. Gregory vice-president, A. B. McCoid secretary, E. C. Keuper treasurer and Dan Canary chairman of the executive committee of the association.

#### FIRST OF CARTERCAR TAXIS

Still another motor car concern has entered the taxicab field. In the illustration shown herewith is a view of the first shipment from the factory at Pontiac, Mich., of Cartercar taxicabs. The new taxicab has the same chassis as the model K touring car, and is equipped with the new aluminum chain housing, permitting the chain to run in an oil bath protected from dirt and grit.

#### MADE IN LUMBER CENTER

The Thayer-Isham Automobile Co., of Marinette, Wis., has just completed a motor truck of original design for the Lauerma Brothers Co., a department store in Marinette. The truck is the first motor car to be manufactured in the big lumbering center of Wisconsin, and the company will expand from a garage and agency to a manufacturer. Nearly every part was made in Marinette. The Thayer-Isham company manufactured rear axle, brakes, shaft, steering gear, running gear, radi-



PACKARD TRUCK UTILIZED IN CARRYING ICE

ator, iron work, gasoline tank and control levers. The body and wheels were made by the Marinette Carriage Works. The truck has a wheelbase of 100 inches, 60-inch tread and 38-inch wheels. Roller bearings are used throughout. The engine will develop 20-22 horsepower and is of the two-cylinder type. Three-point suspension is employed. The truck is equipped with planetary transmission, with two speeds forward and one reverse.

#### CAR PROVES ITS UTILITY

M. M. Hinton, a traveling salesman with headquarters in Dallas, Tex., whose territory in that state of magnificent distances includes an area threaded by highways which, if they ran straight, would extend from San Francisco to New York, has driven a Rambler roadster 14,000 miles on making the rounds of his customers. Out in Texas where people order their groceries on the long-distance telephone and think nothing of riding 20 miles to visit their neighbors, the motor car has taken the place of the wild mustang and the jack-rabbit. Hinton once tried to handle his territory with the aid of trolley cars, steam cars and horses. He could not cover half of the ground he desired to cover. With the car he can make three or four towns a

day and the fact that these towns may be 20 or 30 miles apart does not worry this salesman.

#### MILWAUKEE REPRESENTED

The Brodesser Elevator Co., Burleigh street and Humboldt avenue, Milwaukee, has entered the field of manufacture of motor trucks and light delivery wagons, and will devote its entire attention to this business. New machinery is being purchased, and the name is to be changed to Milwaukee Motor Truck Co., capital \$200,000. The decision followed successful tests of a light truck manufactured as an experiment. This truck, weighing 1,800 pounds, with an 18-horsepower motor, air-cooled, has run continuously for 3,000 miles. The company will turn out only one model for the present. Next season the company will place on the market 2, 3 and 6-ton trucks, it is announced.

#### NOW IN ICE SERVICE

Ice is now hauled in motor vehicles, which are taking the place of the familiar horse-drawn ice wagon. The picture shows a Packard 3-ton truck, especially equipped for hauling ice. It is in the service of the Union Merchants' Ice Co., of San Francisco, and reports from the company state the service is satisfactory.



LAMBERT FRICTION-DRIVE TRUCKS ORDERED BY THE CHICAGO DAILY NEWS



# From the Four Winds

N S E W



**Pittsburg Dates Changed**—The endurance run of the Pittsburg Gazette-Times and the Pittsburg Chronicle-Telegraph will take place on April 28, 29 and 30, the dates having been changed recently. A large number of contestants has already entered.

**Cup Tour Dates Changed**—The date of the run of the Binghamton Automobile Club, of Binghamton, N. Y., to Boston for the Johnson trophy has been changed from June 14 to 19 to June 21 to 26. This move has been made because of the G. A. R. state encampment in Binghamton on June 16 and 17.

**Laws Pay**—That the work of mulcting motorists is a paying proposition for the authorities of the townships adjacent to Philadelphia is manifest from the annual report of Middletown township, Montgomery county, which shows a total of \$3,085.75 collected in fines for various infractions of the motor laws.

**California Carnival**—An outdoor motor carnival is among the events planned by the southern California motorists for July, during the visit of the Elks, who gather there for their annual convention. At the last meeting of the Automobile Dealers' Association of Southern California a committee composed of J. S. Conwell, Norman Church and Leon T. Shettler was appointed to investigate the proposition and report at the next meeting of the association. The carnival was suggested by Manager Conwell, of the Maxwell agency. The plan is to hold the carnival at the Ascot race track. This will provide a large grand stand and a good track for speed events and there will be a large infield where the cars can be displayed in tents. The associ-



WHEELER & SCHEBLER CUP

ation is divided as to the time of holding the carnival. Some members favor waiting until fall, as the big road race is planned for July 4.

**Going It Alone**—Failing to secure any acceptances to his challenge for a round-trip winter endurance run from Philadelphia to Pittsburg and return, William P. David, Middleby agent in the first-named city, proposes to send his car over the route alone during the next fortnight, just, as he says, "to show the doubting

Thomas that there is nothing the matter with the cooling properties of the Middleby." The route will be via Coatesville, Lancaster, Columbia, York, Gettysburg, Chambersburg, McConnellsburg, Everett, Bedford, Somerset, Mount Pleasant and Madison, returning over the same course.

**Match Race Proposed**—Application for a sanction has been made to the A. A. A. for a track meet at Ascot park, Los Angeles. It is proposed to run a match race between a Stearns and a Locomobile. A \$5,000 wager is proposed, but the distance has not been settled as yet, one side wanting 100 miles and the other 500.

**Examination Desired**—The Philadelphia Professional Chauffeurs' Club is doing its utmost to interest motorists in the Quaker city and throughout Pennsylvania in a bill which is to be introduced by Representative Marvin, of Pike county, which will make it necessary for every professional chauffeur to pass an examination before a qualified board of examiners before he can receive a license. In the opinion of the Philadelphia drivers the majority of the recent fatal motor accidents throughout the country can be ascribed to incompetent handling of cars by men who are not qualified for the job.

**Makes Peculiar Tour**—J. L. Frazier, a Denver motorist, recently drove his car to Phillipsburg, Kan., a distance of about 400 miles. The route is along the Kansas Pacific railroad to Limon, Colo., and then follows the Rock Island the remainder of the distance. Mr. Frazier thought at one time he was lost, when he came to a gate in the road, but inquiry showed that the road does not run on section lines, and the settlers have built fences, putting gates at the roads so that their cattle will not stray into forbidden pastures. There are about twenty gates to open on the route between Limon and Phillipsburg.

**Carnival Endurance Run**—At the last meeting of the general carnival committee of the New York Trade Association the matter of an endurance run was discussed. Chairman Alex. Schwalbach announced as the committee who will serve with him the following: Herman Kuntz and Coker F. Clarkson, of the A. L. A. M.; Alfred Reeves and L. M. Bradley, of the A. M. C. M. A.; E. L. Ferguson and F. L. Harbach, secretary of the Philadelphia Quaker City Motor Club. Various plans are in view for this endurance run, but it was thought best not to make a formal announcement until the committee had taken more time to give proper consideration to the various forms of endurance tests which have been held in the past. The finance committee made a satisfactory report on



MAXWELL JUNIOR WHICH MADE 2,000-MILE NON-MOTOR STOP RUN



subscriptions. The outlook now is that this fund will reach \$12,000 to \$15,000, which is the amount required to carry out the present elaborate plans of the committee.

**Weston Again Walking**—Edward Payson Weston, the famous pedestrian, started on his seventy-fifth birthday, March 15, to walk from New York to the Pacific coast. A Maxwell car carrying judges, attendants and supplies accompanies the veteran.

**Bisons Want New Hall**—President Satterfield and practically all the members of the Automobile Club of Buffalo are boosting the proposition to erect a new public building in that city to accommodate motor car and other shows. Convention hall, where this year's show is to be held, is entirely inadequate to take care of the exhibitors.

**Georgia's Big Run**—Atlanta, Ga., will repeat its sealed bonnet endurance run. Few plans have been made for this as yet. It is likely that the affair will be a 3-days' trip over a trying course. Last year's contest would not have been strenuous for electricians. This year there will be a route selected and time limits set which will make it entertaining for the high-class cars, as well as for the little fellows.

**Maxwell Test Successful**—Early last Friday morning the little Maxwell Junior, which was started on its 2,000-mile non-motor stop journey over the streets of Philadelphia and suburbs the previous Saturday finished the task imposed upon it, and after being fitted with a new set of Ajax tires was headed for Pittsburg, where it will form a part of the Maxwell exhibit at the show there. The 2,000 miles were covered in 5 days 16 hours 45 minutes, and during that time the engine droned away unceasingly without a skip or a miss. On its journey to Pittsburg the little car was handled by drivers connected with the agencies at Lancaster, Harrisburg and other points on the route



MODEL IN CONCRETE OF INDIANAPOLIS MOTOR SPEEDWAY

to the Smoky city. Tabs kept on the performance of the car during its Philadelphia journeys show that a fraction over 24 miles was averaged per gallon of gasoline, and that a schedule of a trifle under 15 miles an hour was maintained throughout.

**Rich Speedway Cup**—Designs for a silver trophy to be awarded by the Indianapolis motor speedway this season have been accepted by Wheeler & Schebler, carburetor manufacturers of Indianapolis. The trophy, which is 8½ feet high, has an actual coin value of \$5,000 and is emblematical of the transition from the Indiana pole drag method of transportation to the 1909 touring car. It is of sterling silver, the silver being in dull finish with the detail work oxidized. Three figures are shown, the top and principal figure being Victory standing on a winged wheel, awarding a wreath of laurel. Below her are two figures, one an American Indian, the other an European athlete, denoting the international character of the event. Around the base are four plaques, bearing

respectively, an Indian pole drag, a two-wheeled chariot, a stage coach and a modern touring car. It is expected work on the speedway will be completed by July 10.

**Tiny Motor Car**—What is claimed to be the smallest practical motor car in the world has just been presented to Dell See, of Superior, Wis., by members of the Superior fire department. Mr. Dell lost both legs several years ago. Al Hunter, engineer of the department, designed the car, which can make 15 miles an hour. It is only 3 feet long and 18 inches high. The tires are solid 8-inch rubber. Power is obtained from a ¾-horsepower engine. The seat holds one person and is on a pivot. The car is a curiosity.

**Hartford Reorganization Plan**—The reorganization committee of the Automobile Club of Hartford, Conn., will report at the club meeting Friday night, at which time a banquet will also be held. It is quite probable that the by-laws of the club will be so altered as to make it impossible for any but owners to hold office and that no member affiliated with the trade or industry be an officer of the club. It is much desired that a bureau of information be established by the club this season which would have available general touring information, maps, general directions, etc.

**Rambler Cracks a Record**—The round-the-bay record for the Pelton cup, now a famous San Francisco trophy, which was lowered to 2 hours and 32 minutes by a six-cylinder car, was smashed March 15 by L. B. Harvey in a four-cylinder Rambler roadster. The round-the-bay route from Oakland to San Francisco by way of San Jose is 100 miles in length and the Rambler lowered the record 8 minutes and 12 seconds, starting at 7 a. m. and crossing the finishing line at 9:23:48. The car in which Harvey made the run also holds the record between San Francisco and Los Angeles and return. Harvey made San Jose from Oakland in 55 minutes and came up the east side of the bay in 1:23:48.



PEDESTRIAN WESTON AND MAXWELL THAT WILL ACCOMPANY HIM

# ANALYZING MOTOR CARS' STEERING SYSTEM

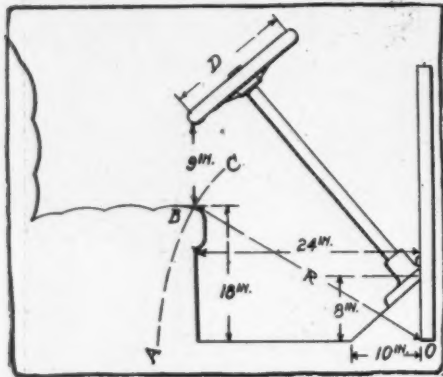


FIG. 1—CONVENTIONAL STEERING COLUMN

**M**ECHANICALLY, there are many things to take into account before it can be said that the steering equipment of a motor car will be up to a fitting standard, and it will interest the designer, the constructor, and the ultimate owner of the car, to go over steering details at some length, reviewing the several features, hoping thereby to gain an advantage. It has been shown how cars should be handled on the road, but the mechanical details are still unexplored.

Familiar as the steering wheel is, even so, for the sake of completeness, it will be necessary to use illustrations, if clearness is to be a property of the text. The wood rim of the wheel is often oval instead of round, in order that the grip will be improved, and the hands will not fatigue so quickly as when the section of the wooden rim is round. The tilt of the wheel is usually such that the relation of the wheel to the driver's seat is as shown in Fig. 1, in which the distance from the seat to the rim is 9 inches.

The radius O B is usually about 28 inches, and, if the seat is less than 18 inches from the deck, which is the value allowed in the figure, the seat must move back so that the edge—front—of the seat will be bisected by the arc of the circle A C, in order that the radius O B will never be less than 28 inches, which seems

**EDITOR'S NOTE**—This is part 3 of a series of articles by Thomas J. Fay, dealing with the problem of the steering system in motor cars.

to be the minimum allowable foot room. The tilt of the wheel will have to do with the strength of the column, provided the wheel is in the vertical plane, for trucks, and the strains will be in the nature of bending moments. If the wheel is not strong and well braced it is likely to cause trouble, since the pressure will cause the same to bend. The tilt of the wheel, for roadsters, affords the greatest advantage, since the work comes on as in a column.

Equestrians, when they mount a horse, with a view to experiencing a long, hard ride, sit up straight, and avoid all tendencies such as will cause curvature of the vertebra. In motor car work, owing to the overhang of the seats, it is not uncommon to observe that the steering wheel is not in the center of the driver's seat. The result is as might be expected; the driver is much fatigued in the course of a long ride, due to the ungainly position which he is compelled to assume, and Fig. 2 shows the approximate dimensions of the driver's seat as it obtains in some of the well-designed cars, in which it will be observed that the steering wheel is in the center of the seat.

In some of the earlier designs of motor cars it was the practice to employ what is known as tilting wheels, placed for the purpose of enabling the driver to more readily leave the seat. This plan looked like a good theory, and for a time it was regarded as a regular thing in motor car work. In the long run, the best results were due to a rigid steering wheel, and it was also found that the anchorage of the steering column could not be too good.

If the steering column is vertical, as shown in Fig. 3, care must be exercised to have the tubing of good diameter substantially flanged at the deck, and it will be quite an advantage to have a brace, or tie, further up. In this case the motor is

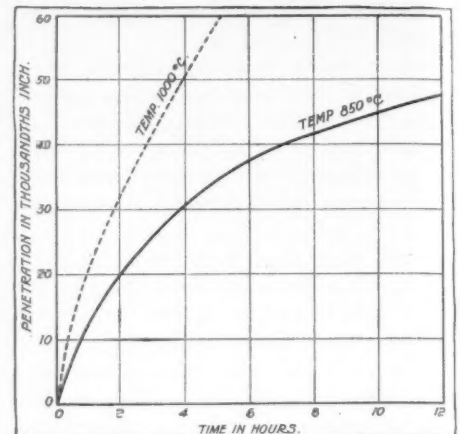


FIG. 4—CARBON PENETRATION IN CEMENTING STEEL

under the deck, which form of construction permits the builder of the truck to offer a larger platform for goods, without the excess overhang at the rear, which is so prone to influence the tire bill, for the reason that the rear wheels have to sustain under more than a fair share of the burden.

Having thus indicated the extent to which lost motion is undesirable, as this lost motion relates to a flimsy fastening of the steering column, it may be well to go on with the discussion of lost motion as it relates to the mechanism for steering. There are three sources of lost motion in the mechanism as follows:

In the reducing gearset of the steering post, due in some cases to inferior designing, and again if the gear is absolutely irreversible.

In the buffer spring placed in the drag-rod for the express purpose of minimizing shock, hence requiring lost motion.

In the joints and bearings through the system.

Some lost motion must be tolerated, since it is even desirable, and in its absence the parts will be subject to shock components that will engender fatigue in the metal, which in turn will be rendered manifest by crystalline—structural—for-

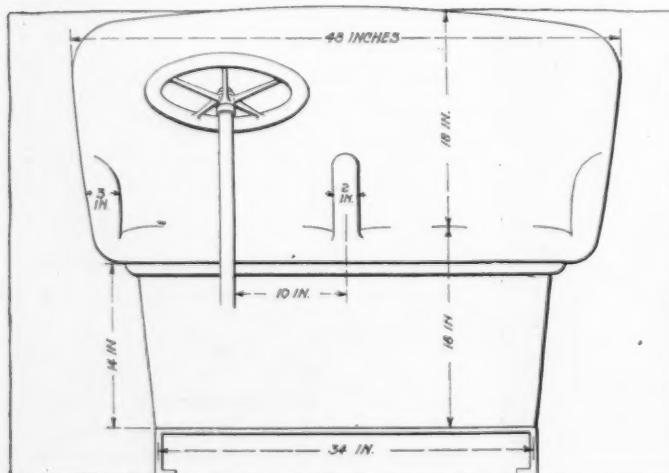


FIG. 2—TYPICAL MOTOR CAR SEAT

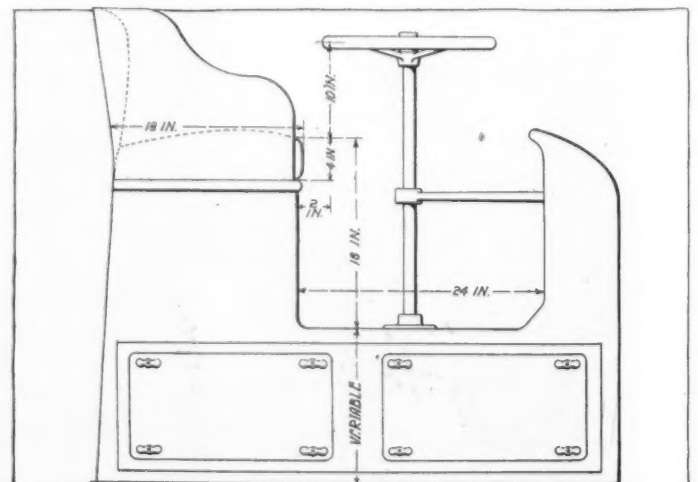


FIG. 3—TRUCK STEERING COLUMN



mations in the body of the same. As an illustration of this crystalline growth, it is fair to call attention to the practice of annealing crane-chains at least once a year, for the express purpose of correcting the structure, rendered crystalline in regular service by the series of little shocks due to the chain rolling over the drum, under strain, which shocks are intensified by the unevenness of the links which bump against the periphery of the drum. It is the series of little shocks that have to be feared, as they abound in the steering system, in the cases in which no provision is made to dampen them. A spring S placed in the dragrod, in the manner shown in Fig. 5, will afford the dampening effect, but it is at the expense of some lost motion.

In order to have the dampening effect of the spring without excess lost motion it is necessary to include considerable stiffness and few turns. It is not desirable to have the steering interfered with, as it will be if a spring of many turns is used, and if the section of the spring is such that but little pressure will be required to compress the same. The spring shown is made from square wire of a fine grade of spring steel, and, with four turns of the wire, the amount of play is reduced to very little, even under the most severe conditions of pressure. Even so, it is due to this stout spring that the metal in the steering parts will sustain in service, and a crystalline structure will be avoided.

Incidentally, and while the matter is on the tapis, it will be well to point out the manner in which brazing is avoided, in the process of assembling the dragrod, which details are also applicable to the tierod. The tube T is threaded to receive the socket forgings P, which does not prevent reinforcing the tubing at the ends, near the socket forgings, if the tubing used is thin. This operation can be avoided if the tubing is made thick enough to afford an adequate wall, despite the thread.

In motor car work it has been well demonstrated that nuts and studs will back off even if the thread is fine, and despite the use of tapers, or if the thread is a tight fit. Nuts have to be locked on, and in the case of the drag and tierods, in the steering system, it is necessary, nay, imperative, to relieve the situation of all risk, which can only be done if the locking question is extended almost to the extreme. Fig. 5 shows the manner in which the socket forgings are split, and how a clamping bolt H takes care of the locking, which clamping bolt is, in turn,

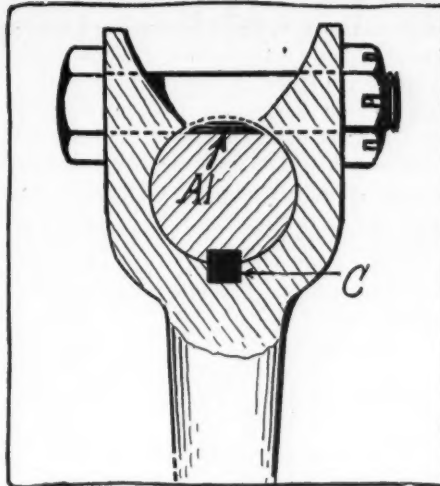


FIG. 6—ATTACHING RADIUS ARM

prevented from drifting off since castelated nuts are used, in which cotter-pins are placed to keep the nuts from backing off.

In this case the buffer spring is provided with a means of reducing the lost motion. If the spring is found to be too weak, adjustment is by means of a stud K with a locknut in the end of the socket forging. The socket faces are hardened, and the ball is also treated to render it hard. In this way the wear on the ball and sockets falls off to a minimum, and adjustment comes only at long intervals.

Heating a part to a red heat—or any other heat—and applying cyanide of potassium, will not grow a depth of carbon sufficient to be of any avail, on the ground that the time required for the penetration of carbon is greater than that which will obtain in the process as here suggested. Fig. 4 shows the rate of penetration of carbon in steel if the heat of cementation is 850 degrees centigrade, on the one hand, and 1,000 degrees centigrade on the other. If a piece of cementing steel is raised to 850 degrees centigrade, and if the same is packed in cementing material, the curve shows that it will take slightly more than 4 hours to grow a depth of carbon of 0.030 inch. If the same steel is heated to 1,000 degrees centigrade, the depth of carbon will increase to slightly over 0.050 inch, but if the heat is applied for a few moments, as it is in the cyaniding process, sometimes adopted in shops, it is assured that the depth of carbon will be but slight, say, 0.005 inch. This depth of the carbon, in density sufficient to assure that the surface will quench to hardness, is not enough to be of any service. In the meantime, taking into account the importance of the parts, such as the steering crank,

which, it will be remembered, has to sustain under severe conditions, and considering the neck, under the ball, of small section, it is extremely dangerous to cement the same at high temperatures, and 900 degrees centigrade is probably the safe limit, allowing that the steel will be of a suitable grade. Owners of cars will find it to their advantage to look into this phase of the question before they allow any repairs to be made, if the repairs have to include heat treatment of the steering crank or like parts.

If the ball and sockets are not hardened in a suitable manner, it will be but a short time before the ball will wear down to an elliptic shape, and lost motion will be present in consequence. All along the line this question will crop out, and it is the accumulation of little increments of lost motion that, added up, renders steering so disagreeable, if not unsafe, that motoring becomes quite out of the question. If lost motion follows in the cases involving inferior hardening of the bearing surfaces, securing the cranks to their respective shafts will lead to additional trouble of the most disagreeable sort if the work is not well done. Figs. 6 and 9 show one way in which the cranks are secured to the shafts with a view to eliminating trouble. In this case the crank is fitted in a taper, and the clamping bolt cuts through the shaft in the manner shown at A and A1 to prevent the crank from floating off of the shaft, even if the nut should come off. The nut is used to pull the crank up on the taper, and the key C is for the purpose of preventing the shaft from rotating in the hub of the crank.

A second method is sometimes used, in which the clamping bolt, shown in Fig. 8, is excluded. In this case it will be observed that the crank is drawn up on a taper, and is prevented from drifting off by the nut used to draw the hub up on the shaft. The square shaft, as shown in Fig. 7, is much used, and if the work is well executed the scheme has the merit of serving well for the purpose. In this case the clamping bolt keeps the crank from floating off of the shaft, and if the bolt is

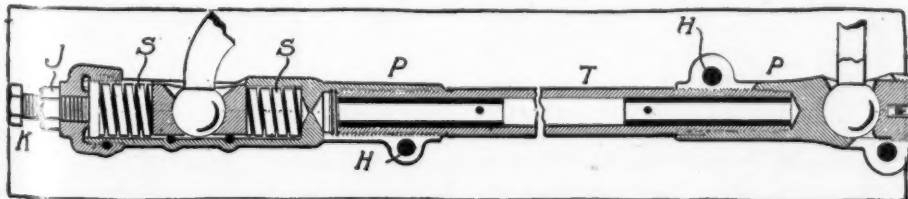


FIG. 5—CONSTRUCTION OF DRAG LINK

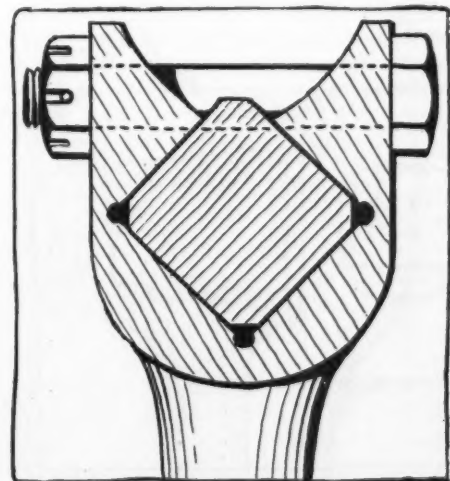


FIG. 7—ATTACHING RADIUS ARM

drawn up tight there is small danger of lost motion.

It must be remembered that the clamping bolt is required to sustain under quite severe pressure, and that it will elongate a little at first is generally true. Under the circumstances it is necessary to take up on the bolt after a car has seen a little service, and it will be the height of folly to apply a long-armed monkey-wrench to the nut and pull until the bolt is partially twisted off, for, in all truth, it will come off of its own accord the very next day, and it cannot be said that the incident will transpire under the most favorable conditions.

It is unfortunate that all the joints in the steering system have to be exposed to the dust of the road, and to such mud accumulations as are bound to splash up, and on the parts when the going is bad. But this is all the more reason why the system should receive every possible care, and if leather protectors are not used, as they should be, it is necessary to clean out the joints at frequent intervals, apply hard grease to the surfaces, and pack the same into the cavities, on the theory that when the grease is in, the dirt is out. If the links and levers are so placed that they will be high off of the ground, the amount of attention required will be a minimum, and the parts will be protected from damage due to a road obstruction to the maximum degree. In town work this is not so important, and as a rule the systems are so nicely devised that little is left to discuss. In touring work on unimproved roadways, however, it is with a fine sense of feeling that the location of the parts for steering are discovered up, out of harm's way.

There is still one unexplored field in which lost motion can become a serious factor, and in which repairs are serious to contemplate. This lies in the gearset in the steering system, the prime function of which is to enable the driver to steer the car, on a basis of safety, taking into account the angle of cant of the road wheels for a given rotation of the steering wheel. In most cars it is the practice to rotate the steering wheel one and one-half revolutions in order to cant the road wheels the whole—combined—angle, and, con-

sidering some of the smaller cars, it is not uncommon to find that the combined angle of cant of the road wheels will follow revolution of the steering wheel. Lost motion adds to the revolution of the steering wheel and introduces a lag in the response of the same, which becomes dangerous, if

### Motor Car Literature

The Randolph Motor Car Co. in its first catalog illustrates and describes its commercial vehicles.

The Storage Battery Co. is circulating a new catalog illustrating its different types of ignition batteries as well as lamp equipment.

The Western Electrical Instrument Co.'s Bulletin No. 6 illustrates and describes all of the various types of Western electrical instruments, including ammeters, volt meters, etc. The book is 8 by 10 size.

The Lozier catalog has a particularly artistic embossed cover. One of the novel illustrations shows a number of cylinders being transported into the enameling ovens, where the enamel on them is baked.

Motorists interested in marine gasoline engines could not do better than secure a copy of the de luxe booklet entitled "Marine Gasoline Engines," a practical treatise which goes particularly fully into the subject with illustrations.

The Pierce-Arrow catalog, 9 by 12 size, contains color plates of the different models. The four types of engines built by the company are illustrated. The usual descriptive pages are employed. The cover is a work of art, containing an allegorical panel emblematic of speed in which a motor car figures prominently.

"The Automobile of 1909" is a most interesting book, issued by the Trenton Rubber Mfg. Co., in the interest of thermoid brake lining, and illustrates on many pages the different makes of cars in which this material is used. On alternate pages with these cars are pictures of famous touring scenes throughout the country.

The Locomobile catalog, a de luxe edition, devotes the first portion to a comprehensive car description in which line drawings showing the systems of the car are used. An interesting part of the book refers to the winning of the Vanderbilt trophy as well as other contests in which Locomobile cars have competed. The book is one of the finest ever published by the company.

"Progressive Locomotion," a booklet published by the Firestone Tire and Rubber Co., is of two parts. The first is a pictorial history of the progress of locomotion from the days of the Egyptian chariot B. C. 1450, to the motor car of today, the intermediate illustrations showing the Anglo-Saxon oxcart A. D. 500, the horse litter, A. D. 950, carriages of the fourteenth century, carriages of the sixteenth and eighteenth centuries, the bicycle and the motor car of 1900. The second half of the book contains a history of rubber.

the amount is overmuch, as often happens.

If the steering gear is absolutely irreversible, it is because the worm and sector in the gearset are cut to show a low angle as to render the same capable of responding in one way only. If the angle of the thread is about 10 degrees, the gear will hold to the irreversible principle, and since it is true that the movement of the wheel will then be a maximum, considering the resultant cant of the road wheels, it follows that lost motion will be the more noticeable. The best practice is in favor of such an angle as will make the gearset nearly irreversible, which angle is about 12 degrees, referring, of course, to the worm-and-sector types of gearsets.

In the screw-and-nut types there is the same condition to be met, but it is disposed of in quite a different manner, as will be shown at the proper time. If the system is absolutely irreversible, great strains will be put on the members when the road wheels strike an obstruction such as will produce a reaction in the gearset. The very fact that a system is irreversible is proof of the blow which can be struck, and the damage may result, since, if there is a limit to the give, there is almost no limit to the effect of the blow.

If the system is not absolutely irreversible, then, when a blow is struck, utilizing the road wheels to transmit the energy of the same, the lack of rigidity will soften the effect of the blow, and the system will thrive without the presence of any factor such as would react against the same. Absolute irreversibility then is not wanted, and a little lost motion is better than none at all, on the ground that safety and the life of the parts will be in better presence.

The effect of striking a road obstruction by the front road wheel is not always the same. If the design is such that the reaction on the steering knuckle crank is zero, which is rarely the case, the principle of irreversibility can be considerably extended without danger to the parts. The reason why the design is not more nearly in accord with a zero product of the strains set up when the road wheels intercept an obstruction lies in the ungainly appearance of the axle, to some extent, and to wheel designs for the rest.

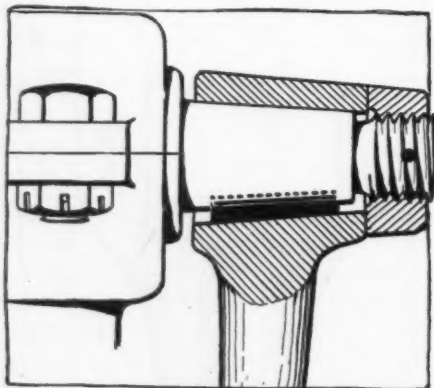


FIG. 8—RADIUS ARM ATTACHMENT

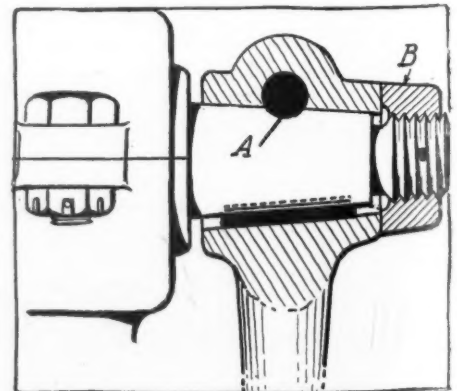
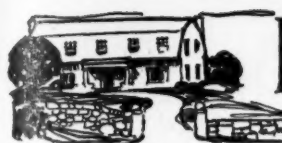


FIG. 9—RADIUS ARM ATTACHMENT





# News from the Motor Clubs



**Regulating Traffic**—The problem of traffic regulations in Providence is being taken up again by the Rhode Island A. C. and it has been decided to go into the matter thoroughly, as the streets in the city are getting more congested every year. The plan in vogue in Boston seems to meet with much favor on the part of some of the Providence men and steps will be taken to have some such regulations adopted for Providence.

**Hoosier Club Election**—The Michigan City Motor Club, of Michigan City, Ind., held its annual meeting March 16 and elected the following officers for 1909: President, Dr. E. G. Blinks; vice-president, B. Kronthal; secretary, Dr. A. W. Gilpin; treasurer, W. W. Vail. Executive committee: A. von Spanje, T. F. Miller, William Smith, A. C. Tawse, John Wolf. There are to be a couple of new macadam roads finished this spring between Michigan City and Furnessville which will complete the macadam stretch between Hobart and Michigan City.

**Laramie Helping**—The Laramie Automobile Club, of Laramie, Wyo., has started a movement among the clubs of the state toward the building of the motor highway to Yellowstone park. The clubs at Rawlins, Rock Springs, Lander and other Wyoming towns, and at Fort Collins, Colo., have given assurances of their co-operation. The board of county commissioners of Albany county has informed President Lovejoy, of the Laramie club, that when the club has selected the most feasible route across the country it will put the road in good condition. The new officers of the Laramie Automobile Club just elected are: President, Elmer Lovejoy; vice-president, J. E. Winslow; secretary, C. M. Tegner; treasurer, E. D. Carter; executive committee: Dr. H. E. McCollum, C. H. Barnett and E. D. Carter.

**Over Historic Ground**—Traversing a country rich in historical associations, the first day's route of the endurance run of the Motor Club of Harrisburg, of Harrisburg, Pa., will refresh the minds of the participants of the run as to their school-days' studies and doubtless stir up their latent patriotism not a little. The first checking station will be located at the main entrance to the battlefield at Gettysburg; another in front of the John Brown monument at Harper's Ferry; a third in front of the old house in Frederick from the windows of which Barbara Frietchie waved her country's flag when Stonewall Jackson and his legions came "up from the south at break of day"; and the fourth in front of the White House at Washington. Dr. Overpeck, of the Quaker City Motor Club, will head the pathfinders

who will go over the route in April, devoting 3 days to each 2 days' run of the contest. The Washington-and-return route will be blazed April 2, 3 and 4, and the Scranton-and-return legs the following week.

**Seeking Improved Roads**—Mayor Crittenden was the principal speaker at the recent smoker of the Automobile Club of Kansas City and that executive severely criticized the streets of Kansas City and promised to help make them better in the future. Kansas City has 51 miles of boulevards and in Jackson county there are 250 miles of rock road. It is proposed that the city have its own street repair plant.

**After Car Thieves**—The Automobile Club of Pittsburg is offering a reward of \$50 for anyone securing the arrest and conviction of any person stealing a motor car belonging to a member of the club while the same is in Allegheny county. Also \$50 will be paid to anyone securing the arrest and conviction of any person who shall injure an occupant of a motor car belonging to a member of the club by throwing stones or other missiles.

**Fighting Water Breaks**—Many of the roads leading out of Washington, D. C., are filled with water breaks that tend to make touring uncomfortable. With a view to securing their elimination the Automobile Club of Washington has appointed a committee consisting of R. B. Caverly, A. W. Evans and F. R. Gordon to devise ways and means to bring about this desirable consummation. This committee is endeavoring to enlist the aid of the hotel proprietors in all the towns within a radius of 75 miles of Washington, pointing out to them that if the roads are

relieved from these thank-ye-ma'ams hundreds of Washington motorists will pass through those towns while touring this summer. Particular attention is being paid to the road between Washington, Frederick and Hagerstown. This is a fine pike, but contains hundreds of water breaks. Their elimination would make it an ideal road.

**Utah After Motor Path**—At a meeting of the Salt Lake Automobile Club, of Salt Lake City, Utah, articles of incorporation were prepared providing for a capital stock of \$100,000 to be used in constructing the new speedway from that city to Saltair, a distance of 15 miles. The stock will be almost totally subscribed by members of the club. It was reported by the committee appointed to secure the necessary land for the speedway that three-quarters of the route had been arranged for.

**Booming Its Run**—To boost its annual endurance run, May 18 and 19 next, the Norristown Automobile Club, of Norristown, Pa., has promoted a unique entertainment yclept an endurance run smoker and pow-wow for Thursday, March 25. All the prospective entrants and many score of other guests will be on hand to enjoy the vaudeville show and other entertainment—not forgetting the pow-wow. A large delegation from Philadelphia, the majority of whom will have cars in the run, will be on hand.

**Opposes Wheel Tax**—The Automobile Club of Washington has gone on record as being opposed to the wheel tax recently imposed by congress upon all motor cars in the District of Columbia. Each member of the club has been advised by the secretary to refrain from paying the tax until compelled to do so by the courts. In view of the fact that the new law carries no penalty for failure to pay the tax, it is regarded as a joke. The district commissioners say they are preparing to enforce the law and the motorists are waiting to see what course they will pursue.

**Rochester Banquet Planned**—The annual banquet of the Automobile Club of Rochester, of Rochester, N. Y., will be held on the evening of March 29. President Speare, of the American Automobile Association, and representatives of the motor clubs of Buffalo and Syracuse will be among the speakers. The Rochester club's nominating committee has presented the following ticket of officers to be elected at the annual meeting to be held in the afternoon: President, Henry G. Strong; vice-president, William C. Barry, Jr.; treasurer, Rudolph Schmidt; secretary, Burt Van Tuyle; directors, James E. Gleason, George Dietrich, George C. Gordon, W. W. Dake, John E. Morey, W. W. Hibbard, John S. Gingeman, Henry S. Woodworth and A. F. Crittenden.



RENAULT BEFORE COLOSSEUM IN ROME



# The Motor Car Repair Shop



## TWO COMMON ERRORS

**T**WO very common errors made by junior repairmen are, first, going at a job without endeavoring to lay out a definite plan of procedure; second, on encountering resistance, resort to a strenuous means which is usually more destructive than effective. It is unwise to tackle a job without first carefully looking it over, and trying to figure out the easiest possible manner in which it may be performed, and before using the heavy hammer, the large monkey wrench, the cold chisel, or the pipe wrench, try to learn the why and the wherefore of the resistance.

A car was once brought into a shop to have the spring shackle bolts, which had become badly worn, replaced with new ones. The foreman turned the work over to a young repairman, boasting 3 years of practical experience, who took to the work reluctantly, complaining the while to his helper, that such work was unbecoming a man of his experience, and should have been given to the helpers. Having been assigned the job, he must stoop to conquer, so after jacking up the front end of the frame of the car, in order that only the weight of the wheels and axle rested on the bolt, and removing the nut from the bolt; he seized a hammer, and to give vent to his indignation, he struck the bolt a resounding blow, expecting it to fly from its place. Again and again he struck but nothing stirred. "It is rusted," he cried. "Get some kerosene and loosen it up." After the helper had applied a copious amount of kerosene, the hammer was again brought into play, but to no avail—the bolt seemed tighter than ever. The perspiration stood out on the brow of the repairman, while the helper looked on with an expression of respectful sympathy and not a trace of envy upon his face. Although the nut had started about  $\frac{1}{8}$  inch, it would not budge any more.

The foreman approached and told the repairman to go out and look at the carbureter on Mr. B.'s car and let the helper finish the replacement of the bolts. With an inward sigh of relief and a few parting instructions to the helper, he hastened to obey. The helper then presented the trouble to the foreman, who, after examining the bolt, gave a couple of turns on the jack, lowering the car enough to take the weight of the wheels and axle off the bolt. He then drove the bolt back into place with a light tap on the head from a hammer; and after filing down the end of the bolt, which had been expanded by the pounding of the repairman, he again manipulated the jack, at the same time tapping gently on the threaded end of

the bolt. Presently the bolt started about  $\frac{1}{2}$  inch. The foreman then put down the hammer and taking hold of the head of the bolt with one hand and carefully working the jack-handle with the other, he drew out the bolt without any apparent effort whatever. The new bolt was at once greased and slipped into place and the nut applied. The whole operation, after the foreman had dressed down the bolt, took about 5 minutes; the repairman had put in an hour in a vain effort to remove the bolt. The helper replaced the other bolts and finished the job in  $1\frac{1}{4}$  hour. Why wouldn't the bolt come out in the first place? The reason was plainly seen on examining it after it had been removed. The bolt had been badly worn on one side, as shown in Fig. 1. Consequently there was a shoulder which rested against the side of the spring and prevented the bolt from coming out; but when the hole in the end of the spring was brought parallel with holes in the bracket the bolt was easily removed.

## CAUTION IS NECESSARY

When grinding valves when the cylinders are in place it is advisable, if possible, to stuff a cloth in the opening between the valve-chamber and cylinder to prevent particles of emery from getting into the cylinders. Care should be taken when a file is used on any part of a motor, in order that no filings get into bearings. Surround the part on which you are about to file with a cloth or waste in such a manner that the filings will be caught therein.

## IF THE CLUTCH GRABS

If a leather-faced cone clutch takes hold fiercely it is either dry, or the dressing previously applied has formed a crust on the surface of the leather. A good remedy in either case is to soak the clutch in kerosene for a few hours and apply neatsfoot or castor oil—preferably the former. To apply this remedy, drop the clutch in; pour or squirt a generous amount of kerosene between the inside faces of the clutch and flywheel; draw out the clutch till the oil begins to flow out at the bottom; turn it around slowly for several minutes in order that the oil may be well distributed

over the surface of the leather; then fasten the clutch in this position and let it soak for a few hours to soften the surface. The operation should then be repeated with neatsfoot oil. Do not let the clutch in immediately, as the oil will be squeezed out before it has soaked in.

## IF THE CLUTCH SLIPS

If the clutch slips look to the rods and devices governing its operation, and see if it is allowed to go all the way in. Lubricating oil will cause a clutch to slip. It has often been applied by mistake or dripped down on the clutch from the lubricator, and should be washed out with gasoline, then kerosene, and neatsfoot oil applied. Possibly the spring is weak and needs taking up. If a clutch, which under ordinary conditions gives good service, should slip when called upon to pull a car through exceptionally deep sand, or up an exceedingly steep grade, it is time to get out and push or find some means of reducing the load on the clutch. Do not attempt to make it hold by applying sand, etc., or by speeding up the motor and letting the clutch in quickly. The use of sand is liable to destroy the pitch of the flywheel, and letting the clutch in quickly will either twist off a drivingshaft or universal joint, or burn the clutch-leather. Where a clutch has been burnt, a new leather is necessary. The best temporary treatment of a burnt clutch is the application of a mixture of glycerine and olive oil; but Fuller's earth, litharge and other floury substances have been successfully used in cases of emergency.

For metal-to-metal disk clutches a mixture of kerosene and cylinder oil is a very satisfactory lubricant. The proper proportions of this mixture must be found by the driver. If the clutch slips reduce the proportion of cylinder oil; and if it grabs reduce the proportion of kerosene. Clutches whose frictional surfaces are metal-to-asbestos, thermoid or some other anti-friction fabric, are designed to run dry, and should not be oiled except in case they become so dry that they take hold too fiercely. Disk clutches should have the oil removed regularly, the disks cleaned with kerosene and fresh oil added.

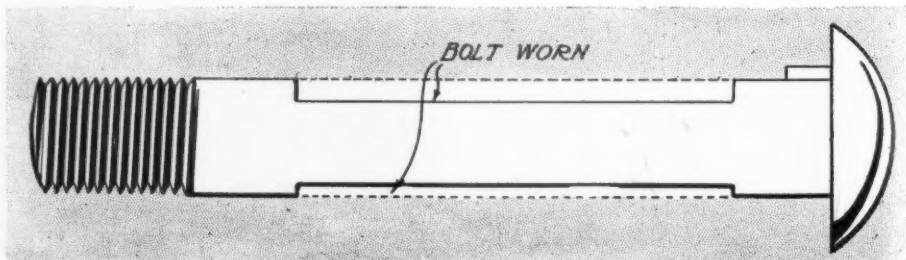


FIG. 1—REMOVING A WORN SHACKLE BOLT





# Manufacturers' Communications



**M**ILLTOWN, N. J.—Editor Motor Age—Now that the motoring season is about to open and garages are being visited by eager owners preliminary to putting their cars in commission, those who took the precaution to jack up their motor cars in the fall will be rewarded by finding the tires in much better condition than will those careless mortals who overlooked this important matter. It is even better to remove the tires altogether if the car is to remain idle for a long time. The inner tubes should be rolled up and placed inside the covers, wrapping the whole in paper or canvas, after which the bundle may be hung up on a peg until wanted. We advise customers to have their tires looked over carefully and repaired if necessary and put into good shape early, when there is more time, than during the rush and hurry of the touring season. This is a good plan, and there is no better time than the present to attend to this important matter.

There are two ways of maintaining a motor car—an expensive and an economical way. Two owners having cars exactly alike will often experience entirely different results; one will find his car a source of unending pleasure secured at nominal maintenance cost, and the other will have trouble of all kinds and may never experience the true joys of motoring. For instance, proper inflation is very important. Proper inflation does not mean simply to keep the tires pumped up hard, for too much inflation is about as bad as not enough. Over-inflation stretches the tire fabric unnecessarily, kills the resiliency of the tires and eventually ruins them, besides subjecting the mechanism of the car and its occupants to constant shocks and jars, which are the very evils the pneumatic tire is designed to prevent. Of the two errors, under-inflation is the worse, however. Deterioration is from three to five times more rapid in the latter case than in the former. Beginners are nearly always the worst offenders, and being afraid of inflating their tires too much rarely inflate them enough. Although over-inflation is a common fault, fully 50 per cent of the tires tested at our factories and branches were insufficiently inflated. Don't be afraid of bursting the tires. The tires will stand as much pressure as an ordinary tire pump can put into them. The air pressure in the tires should be proportioned to the weight of the car and its occupants, the size of the tires and the horsepower of the motor. Additional satisfaction would follow if every motor car owner would insist that certain common practices be avoided. For instance, a car

## Proper Care of Tires

is frequently allowed to stand in water or on a damp garage floor. Nothing could do the tires more harm. Under the constant influence of humidity the exterior rubber covering of the tire is bound to separate from the fabric sooner or later. The tire is then condemned, and the manufacturer gets the blame for the consumer's ignorance or carelessness, or both—Michelin Tire Co.

Hartford, Conn.—Editor Motor Age—If a car has been housed up during the winter and is now being overhauled and fixed up for the spring driving, the owner should be sure that tires receive their share of attention. A careful examination of the tires at this time may save much inconvenience and expense in the near future. When a car is not to be used for an indefinite period, all four wheels should be jacked up. It is advisable to remove the tires from the rims when the car is stored. Keep the casings and tubes in a fairly warm atmosphere away from the light and slightly inflate the tubes, as this keeps them very nearly in the position which they will be used later on. Before putting the tires back on the car, the rims should be thoroughly cleaned and any rust carefully removed, as rusty rims quickly destroy tires. A coat of shellac is also a good thing for the rim.

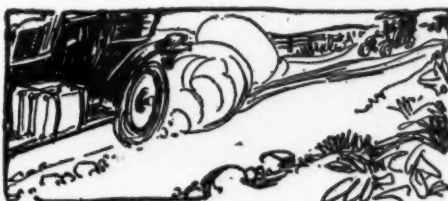
When the owner has assured himself that the rims are in a good condition he should go over the casings thoroughly to see that there are no gashes or cuts which need repairs. If there are he should take them to a thoroughly reliable repairman and have them put in good condition. The tubes should be examined in the same way to see they are in good order. If the tires are the same size on front and rear wheels, it is a good plan to change them around, as rear tires nearly always show wear first and longer service is obtainable by changing them from time to time. The tires which show wear on one side from use on rutty roads or from other causes can have the worn side turned in toward the car. In the opinion of the owner he will soon be in the market for a new set of tires, it has been found by the old experienced motorists that it is a sav-

ing of time and money to buy new tires in the spring and use up the old casings and tubes as extras. Be sure the tires are large enough for the weight which is put upon them. It is no exaggeration to say that most of the tire trouble encountered today is caused by using tires which are too small for the load which they are expected to carry, or if the tires are large enough they are not properly inflated. It costs but little more in the beginning to buy a large enough tire and in the end the cost is considerably less.

The tire manufacturer cannot impress upon the motorist too strongly the necessity of having sufficient air in the tires. A tire which is not properly inflated, of course, gives under the pressure of the load which tends to weaken it and trouble will come when under ordinary circumstances it should not be expected. The following will be of material assistance in fixing up tires for starting out this spring: Forty-five pounds in 2½-inch tires, 50 pounds in 3-inch tires, 60 pounds in 3½-inch tires, 70 pounds in 4-inch tires, 80 pounds in 4½-inch tires, 90 pounds in 5-inch tires.

Tires should be inflated until they show a very slight depression under the load they have to carry. Furthermore, after applying the tire to the rim it should be inflated sufficiently to keep the rim off the ground; then remove the jack and finish pumping with the weight of the car resting on the tire. It can then be readily seen when the requisite amount of air has entered the tire.

With the assurance that tires and rims are in good condition, and that the tires are properly inflated troubles should be few and far between, if the owner will bear in mind that they should be treated well. He would not think of abusing his horse. The same principle applies to tires; treat them well and they will live longer. The horse in one's barn is fed every day; it does not take very long, but the same time given daily to an inspection of your tires will be well spent. Never run tires deflated. The owner wouldn't drive a horse with a broken leg or would you expect him to run at break-neck speed through a pile of rocks in the middle of the road. Do not drive a car rough-shod through this same pile of stones and expect tires to come through unscathed. Curbstones, street car tracks, railroads and rough plank bridges should always be courted with discretion. A little common sense in driving often will save many dollars. Quick application of brakes when the car is going at high speed means injury to the tire, as the brunt of this sudden halt is sustained by the pneumatics.—H. G. Birmingham, Hartford Rubber Works Co.





# Among the Makers and Dealers



**Running Night Force**—The K-W Ignition Co., of Cleveland, O., is now running a night force.

**Now Has Marion**—B. F. Blaney, who was connected with the Selden car in Boston some time ago, now has the agency in that city for the Marion.

**Vesta Battery Depot Started**—The Philadelphia Vesta battery depot, A. C. Trammell proprietor, has been established at 510-512 North Broad street.

**Takes the Brush**—An agency for the Brush runabout and delivery wagon has been established in the county of Sussex, New Jersey. Reeve Harden, of Hamburg, N. J., will serve the interests of this concern.

**Buys Patents**—The Unit Coil Co., owner of the Varley and Williams unit coil patents, recently purchased the Brigham and Lawton buckproof coil patents and also two basic master vibrator patents issued to Miller and Dow in 1904.

**Have the Mora**—The Mora agency in Washington, D. C., has been given to Fister & Lutz, who have formed a partnership. Mr. Lutz was formerly agent for the Oldsmobile line, but retired from business about 2 years ago on account of ill health.

**May Open in Milwaukee**—Willard V. B. Campbell, of Horicon, Wis., who was recently appointed state representative of the Lozier, may open central headquarters in Milwaukee. This is the first time the Lozier has been represented in Wisconsin.

**Solar Plant Growing**—The Badger Brass Mfg. Co., of Kenosha, Wis., is planning for extensions of its plant during the spring and summer. A site for additions has been purchased and work will begin with-

in the month. The new buildings will be used exclusively for the manufacture of lamps.

**Succeeds Twining**—The Crawford Automobile Co., of Philadelphia, has taken over the agency for that car, represented in the Quaker city up to a week ago by the Thomas M. Twining Co. The new concern has opened handsomely fitted-up quarters at Broad street and Fairmount avenue.

**Field in Business**—T. H. Field has opened a garage and salesroom at Rice Lake, Wis., under the name of Northwest Wisconsin Automobile Co. He has the agency for the Ford, Overland and Rambler cars. He has already established a livery service.

**Beckers Change Positions**—The Elmore Mfg. Co., at Clyde, O., announces that B. A. Becker and J. H. Becker have exchanged positions in the management of the company. B. A. Becker becomes secretary and general manager and J. H. Becker takes up the work of treasurer. The shift in no way alters the policy of the company, being simply a change to duties rather more congenial to each of the Beckers.

**Fuller to Build**—Alvan T. Fuller, who has the Cadillac and Packard cars in Boston, last week purchased a large lot of land in the back bay, the swell residence section of the Hub, on which he is to erect a fireproof garage. He has been looking for a place for a long time. The lot contains more than 85,000 square feet and it cost Mr. Fuller close to \$75,000. It was one of the biggest real estate deals ever recorded relative to the motor industry in Boston. The building that Mr. Fuller will have erected will cost probably \$200,000

and in it will be housed Packard cars. He will still retain his large quarters in the motor mart.

**Petrel Needs More Room**—The Petrel Motor Car Co., of Kenosha, Wis., which occupies part of a large factory owned by the Badger Brass Mfg. Co., is said to be planning for an increase of manufacturing facilities to meet the demand for the Waite friction-drive Petrel.

**New Kissel Agencies**—The following agencies for the Kisselkar are announced: Bertschy Motor Co., Council Bluffs, Ia.; Dick Y. Rowe, Jacksonville, Ill.; E. A. Jeffers, Kankakee, Ill.; Richard Meents, Ashkum, Ill.; C. A. Miller, Ottawa, Ill.; A. E. Dickinson, Bedford, Ind.

**Blake Is Recovering**—E. P. Blake, the New England distributor of Jackson cars, who was injured during the endurance run from New York to Boston by being thrown out of a car at Marlboro, has recovered so as to be able to be removed to his home at Boston. He will be able to move about again in a few weeks.

**New Moon Agents**—Two new agencies have been established by the Moon Motor Car Co. during the past week, one at Tulsa, Okla., and the other at Louisville, Ky. Starting with a rush order for three cars, the Kennedy Automobile Co. will handle the Moon at Louisville. The Wallace Automobile Co. has the sales end at Tulsa.

**Trying a Side Line**—Welch Brothers, owners of Welch Brothers Motor Car Co., of Milwaukee, Wis., are trying a peculiar combination of businesses with success. They have taken the state agency for the Dalton adding and listing machine, and part of the big garage and salesrooms has been set apart for the adding machine business.

**New Buckeye Concern**—The Perfection Non-Skid Climber Co., of Edon, O., with capital stock of \$20,000, has applied for incorporation papers. The company is composed of the following: F. C. Kaiser, Dr. O. H. Nihart, W. F. Kaiser, J. G. Kaiser and D. T. Kliss, of Edon. A new building is in course of construction for the use of the new company.

**Changes in Boston**—Roy Faye, agent for the Matheson car in eastern Massachusetts, has opened a new salesroom on Boylston street. He was formerly on Massachusetts avenue, but removed to Cambridge, and so now he is back again in the Hub. The Hupmobile is one of the newest cars to come to Boston and it is represented there now by H. F. Farrow, who has the Grout agency. The Middleby car has secured the W. M. Bean Co., of Malden, Mass., as its representative in Boston. Malden is only 5 miles from the Hub and the com-



MOON CAR THAT MADE THE KANSAS CITY-DENVER GLIDDEN SCOUT



pany can easily give demonstrations in Boston. Later on it will open a store in Boston.

**Benton Building**—B. F. Benton, of 302 North Craig street, Pittsburg, is building a garage near Luna park, where he will handle the Studebaker cars.

**Ajax Changes**—More changes in the Ajax-Grieb Rubber Co.'s sales forces have been announced. H. M. De Silva, who formerly traveled through the western territory, has been installed as manager of the Chicago branch. Leon B. Smith has been succeeded by Joseph S. Gibbs as manager of the New York branch and the latter will have charge of the New York and Connecticut territory.

**Starts New Mitchell Building**—The Mitchell Motor Car Co., of Racine, broke ground Monday for the new \$50,000 office building which will form part of the extensive scheme of additions to the big plant. The offices will be located on Packard avenue adjoining the main line of the Milwaukee road. As soon as this building is under way work will commence on additions to the factory proper, and the operations will be carried along all summer. By November 1 the plant will be nearly double its present size.

**Long Trip of the Moon**—Covering approximately 650 miles by road, a car dubbed for the occasion the Moon Scout and driven alternately by J. L. Phillips and G. W. Morgan, both of Kansas City, made one of the hardest motor trips recorded last winter, endeavoring to promote interest in Kansas City and Denver as points on the route of the annual American Automobile Association tour. Leaving Kansas City the latter part of January, the motorists passed through Abilene, Manhattan, Ellsworth and Goodland, Kan., and Limon Junction, Colo., encountering snow, then rain and mud. Afterward they were hindered by this mixture, frozen and sleet storms. But they reached Denver in about 10 days, proving that the roads were not impassable.

**Another Franklin Test**—A small colored boy sat upon the hood of a Franklin touring car during a 60-hour non-motor stop run of the car's engine in Kansas City recently. Throughout the daylight hours of the test he stayed on his perch, and so far was the air-cooled engine from overheating that it failed to keep the boy comfortable, and he wrapped himself in a blanket to keep warm. The test was made in the street in front of the headquarters of the Franklin Motor Car Co., the Franklin dealer in Kansas City, at 1108 East Fifteenth street. It began Monday morning and did not end until Wednesday night; during this time only 1½ gallons of oil and 28 gallons of gasoline were used. A 60-mile as well as a 60-hour test was made. In running the 60 miles the car carried five people about Kansas City, the run being made in 11 hours at the rate of 55-11 miles an hour. The entire course

was covered on the low speed, which is geared at twelve to one. Had the run been made on the high speed with the engine making the same number of turns, the distance covered would have been 225 miles.

**Thomas Deal in New York**—Arrangements have been entered into by the E. R. Thomas Motor Co., of Buffalo, and the Harry S. Houpt Co., of New York, whereby the agency contract of the Harry S. Houpt Co. is discontinued and the selling of Thomas cars in New York assumed directly by the Thomas company. For this purpose it is contemplated that the E. R. Thomas Motor Co., of New York, will be organized as a branch house, under the management of William B. Hurlbut and C. R. Teaboldt, to assume the selling business at Sixty-third street and Broadway at once. The E. R. Thomas Motor Co. owning the premises formerly occupied by the Houpt company, a full line of machines and repair parts will be carried and customers will be cared for.

**Remy Night School**—A night school is the latest innovation at the Remy Electric Co., at Anderson, Ind. The rapid expansion of the company and the consequent increase in the office and factory forces has resulted in many new faces making their appearance at desk and machine. In order to aid the newcomers in adjusting themselves to conditions more rapidly by getting acquainted with the subject of ignition, and especially the magneto, and the business methods employed, night classes were established. The motor, the subject of ignition in general, the Remy system, the foreign magnetos and the relative merits from a mechanical and electrical nature are the topics now under discussion. An assistant engineer has charge of the classes at present. At several of the meetings B. P. Remy, president and chief engineer, has delivered some talks. When the magneto has been discussed thor-

oughly the sales manager will conduct the classes, paying attention to the training of the salesmen and the discussion of the general business policy. Frank Remy, secretary and treasurer of the company, will give the classes some of the benefit of his experience during the business course.

**Whitney Workmen Meet**—The annual meeting of the Whitney Mfg. Co. Mutual Benefit Association was held at the factory smoking room. Reports submitted showed a cash balance of \$500. The membership of the organization is now ninety-seven and is limited to the men workers in the shop. Put to a vote, it was decided to admit the women workers in the shop to membership. The following officers were elected: President, Warren J. Belcher; vice-president, John J. Smith; secretary, Arthur L. Brown; treasurer, J. H. Triesbach; trustees, C. A. Pease, Charles Johnson and R. J. Grady. A smoker followed the business meeting.

**Maxwell Seeks Bids**—The Maxwell-Briscoe Motor Co. is soliciting bids on material for the building of 12,000 cars. Among the articles enumerated are 200 tons of aluminum castings and 150 tons of brass castings. The babbit metal that goes into the bearings also is in excess of 50 tons, while the brass tubing that is used so extensively in motor car construction figures up something like 126,000 feet, or approximately 25 miles. In other words, enough tubing will be used on Maxwell motor cars to extend from New York to Tarrytown. The rivets alone will weigh over 30 tons. Nor are the bids confined to metals. For example, 13,000 hides will be used for upholstery and trimming. Materials for tops call for over 40,000 yards. Then there is the iron and steel,—of course, the biggest factor,—1,000 tons of steel bars, 800 tons of malleable iron, and so it goes. In special steels the Maxwell bids call for 50 tons of chrome nickel steel and 50 tons of nickel steel.



FRANKLIN WHICH MADE 60-HOUR NON-MOTOR STOP RUN IN KANSAS CITY



# Brief Business Announcements



**Mankato, Minn.**—The Cummings garage is being enlarged.

**Tama, Ia.**—Hanson & Pitka are erecting a garage here.

**Moore, Mont.**—W. R. Wilcoxon is organizing a company to maintain a garage.

**Menominee, Mich.**—D. F. Poyer is now occupying his new garage on Main street.

**Fond du Lac, Wis.**—P. B. Haber has been appointed agent for the Ford line.

**San Francisco, Cal.**—The Reliance Automobile Co. is to act as agent for the Herreshoff.

**Davenport, Ia.**—C. A. Ficke is erecting a garage on Main street for the P. C. Peterson Auto Co.

**Horicon, Wis.**—Willard V. B. Campbell has been appointed state agent for Wisconsin of the Lozier.

**Belvidere, N. J.**—J. Frank Thayer is the president of a company now in process of organization to manufacture supplies.

**Tacoma, Wash.**—W. O. Williams has associated himself with the Studebaker Auto Sales Co. as sales manager with E. S. Dimmock.

**Freehold, N. J.**—Frank Muldoon has sold his garage on Throckmorton street to Alexander Paton. A new machine shop is being fitted up.

**Morristown, N. J.**—Seaman Brothers, of this city, have been appointed sub-agents for the Essex Automobile Co., of Newark. They will represent the Jackson and Ford.

**Philadelphia, Pa.**—Fred G. Browning has been appointed manager of the local branch of the Autocar. Mr. Browning has previously been connected with the factory.

**Albany, N. Y.**—The Rome Motor Vehicle Co., of Rome, has been incorporated with a capital stock of \$5,000, by W. H. and Helen L. McIntyre and L. M. and Christian S. Fitch.

**Pontiac, Mich.**—Newton Gresser, who recently resigned his position as manager of the Denver branch of the Michelin Tire Co., has taken a position with the Rapid Motor Vehicle Co., of Pontiac, Mich. He already has made the change.

**Cheyenne, Wyo.**—The Cheyenne Automobile and Supply Co. has opened up a new garage here, and in connection with general work has made an innovation in this part of the country by establishing a package and message delivery.

**Milwaukee, Wis.**—The Wisconsin Motor Mfg. Co. has been incorporated by Charles H. John, Edward Schwartzburg and Fred C. Kuetemeyer of Milwaukee, with a capital stock of \$50,000. Mr. Schwartzburg was until recently a chief partner in the

Schwartzburg-Bond Auto Co., Milwaukee, dealer in commercial vehicles.

**Mt. Vernon, Ind.**—Wilbur Keck has been appointed agent for the Cadillac.

**Trenton, N. J.**—J. C. VanHorn has been appointed local agent for the Overland.

**Wheaton, Minn.**—James Donaldson will handle the International Harvester Co. line.

**Jamestown, N. D.**—A garage will be erected at 109 South Fourth avenue for the James River Motor Co. The company will handle the E-M-F.

**Trenton, N. J.**—Ackors & Mosher, local agents for the Ford, have removed from 323 East State street to the Adams garage at 237 East State street.

**Newark, N. J.**—The Imperial Garage and Automobile Works, of 390-392 Belleville avenue, has completed its new building, and is now open for business.

**Harrisburg, Pa.**—The Central Pennsylvania Auto Co., of which I. W. Dill is the president, has moved to its new quarters at Fourth and Chestnut streets.

**Wausau, Wis.**—John Fehl, of Wausau, Wis., has leased the Liederkrantz building and is converting it into a garage, with a main floor space of 24 by 80 feet.

**Brooklyn, N. Y.**—The Brooklyn Taxicab Co. has been organized with William Rudd as president, Franklyn Kelly vice-president, William A. Abel treasurer, and Vincent M. Many secretary. A number of new cabs have been contracted for,



**Providence, R. I.**—National Mfg. and Metal Co., capital stock \$25,000, to manufacture, sell and repair motor cars, machinery, castings, etc.; incorporators, J. B. Hartnett, D. Rosenberg and John Mueller.

**Schenectady, N. Y.**—Motor Wagon Co., capital stock \$25,000; incorporators, C. H. Bardwell, R. P. Lydon and L. V. Lockwood.

**New York**—Favary Tire and Cushion Co., capital stock \$1,000,000, to manufacture tires and contrivances to be used for cars, boats and vehicles; incorporators, Ethelbert Favary, Joseph Nordenschild and C. S. Block.

**Toledo, O.**—Ohio Electric Carriage Co., capital stock \$10,000. H. P. Dodge is named as one of the incorporators.

**Chicago**—Hearne-Marden Motor Co., capital stock \$3,000, to deal in motor cars and appliances; incorporators, Edward A. Hearne, L. E. Marden, M. J. I. Wheeler.

**Chicago**—City Motor Car Co., capital stock \$50,000, to deal in motor cars and accessories. Incorporators, H. S. McAuley, T. M. Headen and B. F. Webb.

**Schenectady, N. Y.**—Motor Wagon Co., capital stock \$25,000, to operate a garage, deal in motor vehicles, etc.; incorporators, C. H. Burdwell, R. P. Lydon and L. V. Lockwood.

**San Antonio, Tex.**—San Antonio Taxicab and Auto Co., capital stock \$10,000; incorporators, Otto Limburger, J. Vanlandingham and E. R. George.

and contracts have already been signed for six new stands.

**Leon, Ia.**—E. W. Teale has opened a garage and machine shop.

**St. Cloud, Minn.**—The Granite City Machine Co. has opened a repair shop.

**Milwaukee, Wis.**—The Puritan Mfg. Co., Mason street, has established a line of motor supplies and accessories.

**Boston, Mass.**—The G. H. Proctor Supply Co., of 25 Irvington street, has been appointed agent for the Mora.

**Milwaukee, Wis.**—The American Automobile Co., which has just given up the agency for the Oldsmobile, has taken on the Apperson line.

**Omaha, Neb.**—The Marion Flyer, a product of the Hartman Motor Car Co., will soon be placed on sale here, with F. G. Hartman as general manager.

**Decatur, Ill.**—A Jackson agency has been opened here by Doud Brothers. Inability to secure a garage for their own use forced the new firm to open headquarters in the Decatur Auto Garage for the present time.

**Newark, N. J.**—William F. Bradley, who has been acting as sales manager for the Buick Car Co., of 222 Halsey street, has resigned his position, and in the future will be connected with the Overland Motor Car Co., of 16-18 Railroad place, East Orange.

**Madison, Wis.**—The Burton Motor Co. has leased the Fess building and will open new quarters on April 1. It is interesting to note that the Fess building has been used for livery stable purposes for 30 years and passes out of existence as such to become a garage.

**Milwaukee, Wis.**—The Olds Motor Works, of Lansing, Mich., has established a branch in Milwaukee, the agency being now distinct from the American Automobile Co., of this city. The branch has temporary headquarters with the Excelsior Motor Car Co., 621 Grand avenue.

**Savannah, Ga.**—Captain Edward Wilson is the prime mover in a company to be organized to manufacture motor cars and run a taxicab service in this city. Contracts have been made for the taxicabs, and a company, with a capital stock of \$350,000, is being organized to build cars here.

**Los Angeles, Cal.**—A new supply establishment has been opened at 938 South Main street by Seeley, Van Zandt & Crackel. W. E. Seeley is the secretary and treasurer of the new firm, which will carry all kinds of supplies, including the Continental tires and tubes, and the In-vader oils.